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ABSTRACT

Indicators are used in quite different ways in vocational education and training, from control and accountability to performance and quality purposes. A classification model has been proposed in which many indicators can fit. It is based on two important dimensions of indicators: (1) the "message" relating to the information content, meaning, and signification of the indicator and (2) the "purpose" relating to the function and use of the indicator. Four main areas on the scale for the message dimension are as follows: exclusively descriptive, management and policy, performance, and quality. Three areas on the scale for the purpose dimension are indicators used for analysis, used for communication, and with a normative purpose. The two main driving forces for the use of indicators are public authorities and institutions. International and European achievements in the work on quality indicators are illustrated by the following: the Organization for Economic Cooperation and Development's INES (Indicators of National Education System) project, the Eurostat key data, and the European Training Foundation key indicators on vocational education and training (VET). At the level of VET institutions, a wide range of performance and quality indicators have been developed across Europe in the Netherlands, Italy, Portugal, Denmark, and Western Australia. The advantages of using quality indicators can be achieved only if 10 conditions---5 design requirements and 5 requirements for processing and use--are met. (Appendixes contain 77 references, design methodology for quality indicators, and glossary.) (YLB)

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Indicators in perspective

The use of quality indicators in vocational education and training

European Centre for the Development of Vocational Training

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Indicators in perspective

The use of quality indicators
in vocational education
and training

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Foreword

This report is one of the series of studies elaborated within the context of CEDEFOP's project on quality in vocational training.

In conformity with the European Council Resolution of 5 December 1994 on the quality and attractiveness of the VET, CEDEFOP has commissioned and is currently commissioning studies on some key aspects of the debate on quality at European level. It should be clear that the Centre is working both on quality assurance and quality assessment issues.

Quality being a multi-dimensional and relative concept, CEDEFOP has started its works on it with a synthesis of ideas and experiences in seven EU Member States complemented by additional information. This publication of "Quality issues and trends in vocational education and training in Europe" is actually available in English, German, Spanish and French.

Concerning exclusively initial vocational education and quality, CEDEFOP has chosen to limit itself to a comparison of school-based quality concepts and practices in two countries, which are well-advanced in this field: The Netherlands and Denmark.

Two national reports, merged into one under the title "Quality Debate in Initial Vocational Education", have been drawn up. The report, published in English, gives an overview of the policy context on quality and a detailed presentation of the cases of ten schools in both countries, which have adopted different and often complementary approaches to quality assurance.

Based on discussions with experts in the field, CEDEFOP realised that over the last decades the "quality wave" originally started within the manufacturing industry, has also hit the training institutions in Europe.

Certification, and especially certification on the basis of the ISO 9000 standards being one of the most sought after certification mechanisms, CEDEFOP has published a study on the "Application of ISO 9000 Standards to Education and Training" in English and French. The study does not limit itself to presenting the ISO 9000 standards, but it also provides for an interpretation of each single paragraph in a European perspective. It also contains practical suggestions for their implementation and underlines the requirements set up before launching such an operation. Based mainly on the experience gained by their implementation in the United Kingdom, France, Germany, Belgium, The Netherlands and Denmark, the report adopts a critical approach as to the real value added of this quality assurance mechanism in VET.

In relation to quality assessment CEDEFOP has organised jointly with the Greek OAED and the German FHVR-Berlin a conference on "Approaches to the evaluation of European Training, Employment and Human Resource Programmes", aiming to contribute to the definition of priorities so that European Programmes can be more efficiently implemented and evaluation methods improved.

An international and interdisciplinary exchange of views and information on employment policy, vocational training and social policy aspects of the evaluation of European training, employment and human resource programmes took place during the two days of this conference in Athens. The interested reader may find the related papers in CEDEFOP's panorama series in English, Greek, Spanish and German.

Following this, CEDEFOP has proceeded to the analysis of the evaluation practices of quality aspects in vocational training programmes. Five countries have been studied and a synthesis report is in preparation. It will be available in English and French.

Concerning both quality assurance and quality assessment, the Centre focused its attention on the study of the quality indicators in VET, because the development of quality and performance indicators in vocational training and especially in continuing education, is still at a very early stage.

Indicators being used in quite different ways, from control and accountability to performance and quality purposes, the need was felt to present the various types of indicators in the context in which they operate. Their presentation follows the author's own approach and should be read according to his "message-purpose" model, introduced in the first chapter.

As is known, indicators have been developed by a range of institutions at international and at national level. The work on quality indicators at international and European level forms the third chapter of the present study, where the OECD-INES project, the Eurostat key data or the European Training Foundation key indicators on VET, figure among other international achievements.

Chapter four presents the work done by education and training providers either at regional, local or even institutional level.

Besides the critical presentation of the various activities on development and implementation of quality indicators in VET, the present report provides for a classification of them as we have felt that this could contribute to a better understanding of their scope and particular context, since there has been little co-ordination when they were designed.

The main reason for the limited use of quality indicators in VET being the difficulty to meet the preconditions in the various stages of their elaboration, the study analyses the potential problems and proposes ten criteria to be met when designing, processing and using them.

CEDEFOP wishes to thank the author, Mr Wouter van den Berghe and all experts who have helped him in one way or another, for the present work, which we hope will shed light on the tricky question of quality indicators, their trends and use in the future.

Tina Bertzeletou
Project manager

Stavros Stavrou
Deputy director

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Preface

Following the Resolution of the European Council of 5 December 1994 on the quality and attractiveness of vocational education and training, CEDEFOP launched a series of initiatives in order to examine quality issues in vocational education and training, and to underpin the policy debate on these issues. This report on the use of quality indicators is a further contribution of CEDEFOP to this area. It complements earlier CEDEFOP reports on related quality topics, such as "*Quality issues and trends in vocational education and training in Europe*" and "*Application of ISO 9000 standards to Education and Training. Interpretation and guidelines in a European perspective*".

The final chapter of the aforementioned CEDEFOP report "*Quality issues and trends in vocational education and training in Europe*" included a number of recommendations for further research. One of these concerned the use of quality indicators in vocational education and training, as a means to assure and improve quality. The report listed a number of questions that deserved further examination: *"What are criteria for determining quality indicators for vocational education and training? What types of indicators already exist, and which types are lacking? When and how can quality indicators be used? What makes quality indicators for VET different from those for general education? Should indicators be developed preferably at institutional or at macro-level?"*

This report can be considered as a first response to these questions. The initial objective of the study was to provide a better insight in the use of quality indicators as tools for quality implementation and assessment within vocational education and training (VET). I was asked to consider types of indicators that had been developed and/or are currently being used at European level, and examine their relevance as quality indicators. I was equally required to analyse the scope of the indicators examined, on what basis they were determined, and how they were used and implemented. Their value added was to be assessed, and appropriate classifications were to be developed.

All of this was a challenging task in many respects. It had to be completed in a relatively short time span and with limited resources. The methodology adopted was based on the gathering and examination of a range of information sources (books, reports, articles, Internet, ...) as well as discussions and e-mail correspondence with experts at national and international level.

I am much indebted to all the people who, now and in the past, have so willingly provided me with information and feedback on the complex issue of quality in education and training. They are too many to mention here – I hope the reading of this report may give them something in return. I appreciate enormously the financial support received from CEDEFOP, and the continuous encouragement from its staff member Tina Bertzeletou for undertaking this work. Finally I would like to thank the many education and training organisations for whom I have been a trainer or consultant. These assignments always turned out to be enriching learning experiences that have shaped my ideas about what quality really means in an education and training environment.

Wouter Van den Berghe, November 1997

Chapter 1: Indicators

1.1 What are indicators?

1.1.1 Introduction

This study seeks to examine the use and usefulness of quality indicators in education and training, with a focus on vocational training. Since "quality", "indicators" and "(vocational) education and training (VET)" are fairly complex and multi-facetted concepts, the first parts of this report includes a number of sections expanding on these concepts and their interrelationships. This first chapter looks at the notion of indicators; the next chapters will discuss quality indicators and VET indicators respectively.

Most people are familiar with '*indicators*', although they may not be used to the term itself. In fact, in everyday life, other terms and words may be used instead of indicators, e.g. 'rates', 'index/indices' or just simply 'figures' or 'averages'. Indicators are best known from the economic and financial worlds. Typical examples are annual inflation, unemployment rate, average staff costs, return on investment, GDP growth, trade balance, etc. These figures say us something about – hence "indicate" – *the overall situation or performance* of the economy, a market or a company. In fact most of these well known figures can be considered as "performance" or "descriptive" indicators (terms which will be explained later). But we can also observe an increased use of more qualitative indicators about the economy and society such as consumer confidence, frequency of delays, life expectation, ... Moreover, the use of indicators has now penetrated most sectors of activity, including the non-profit area.

The development of indicators is not a recent phenomenon. Governments and private bodies with large and complex interests have always needed some form of *"accountability"* for the resources they provide. The current interest in indicators has precedents from at least the 18th century onwards. Indeed, the appearance and growth of public administration was accompanied by increasing demands for precise descriptions of public sector activity, and eventually for cost-benefit accounting. Already by the end of the 19th century in the developed world the gathering of statistics had become a large "industry" in the face of social, political and economic developments.

The development of so-called *"performance indicators"* in North America and Europe was spurred in the first decades of the 20th century by the application of the theory of the so-called scientific management or "Taylorism". This movement had achieved remarkable results in industrial settings. It focused on a detailed analysis of time and motion in occupations, and required *efficiency measures* and detailed cost-benefit accounting. Interest awoke in other sectors, including education, to apply similar principles. These enthusiastic efforts did not always yield the expected results, however. The "cult of efficiency" collapsed during the 1930s, but has revived occasionally since then.

The development of *economic indicators* started seriously after the Second World War. Politicians, public administrators and business people increasingly needed up-to-date, synthesised, comparable and reliable data on a range of topics as inputs to policy and strategy development. A growing number of economic indicators (trade balance, industrial productivity, GDP per head, economic growth, etc.) were designed and refined over time. International organisations such as OECD, in cooperation with national statistical offices, played a major role in these developments. In a few decades, the economic indicators gained a solid position and status for international comparison. Similar to this movement at macro-economic level, many *financial indicators* (rates) were developed to measure the performance and potential of companies. Indicator sets have also been developed for such areas as R&D, education, healthcare and public services. Such developments are often of a more recent origin and appear to be less well coordinated. Often no mature and internationally accepted indicator sets have as yet emerged, but an initial framework may be available.

Since the 1980s, the *increasing focus on quality, performance and accountability* in all sectors of activity has contributed to renewed interest in the use of indicators. A recent illustration of this trend is the success and increasing use of the *'Balanced Score Card'* [Kaplan & Norton, 1996] in different types of organisations. This instrument contains a set of indicators that relate to different perspectives of a company (financial perspective, client perspective, internal perspective and innovative perspective). The indicators are linked to company goals and critical success factors.

The use of *indicators in education and training* is strongly related to the historical development of governments' interest in the allocation and spending of their resources. In the early 20th century, it was also subject to Taylorist ideas. An anecdote: in the 1920s, some American school districts and universities found themselves calculating ratios between heating costs and results on Latin tests, all in the name of "efficiency"... More seriously, in the United States the first movements towards accreditation of institutions can already be observed from the 1920s onwards – a development which required the availability of objective information in an accessible format.

Thus, the need for objective information to support the monitoring of education systems dates back from long ago, and was fuelled by the gathering of education statistics. It is only relatively recently, however, that the concept of (internationally comparable) 'indicators' has gained fertile ground. A first prudent attempt of the *OECD* in 1973 failed. The second attempt, in the early 1990s, was much more successful, however, and was complemented by the work of several other international organisations and associations (see Chapter 3). This also helped to revive interest at national levels.

Measured by the amount of literature published, the interest in the use of indicators in education has rapidly increased since the 1980s, particularly concerning *indicators for policy formulation* (e.g. in relation to expenditure levels) and as regards *performance indicators in higher education*. [see e.g. Van Vught & Westerheijden, 1993]. This growing attention can be related to the governmental interest in these matters. A second and more recent drive for the use of education and training indicators has come from the quality movement, which is now increasingly penetrating this sector. Modern quality assurance approaches require appropriate measurements, and often these take the form or lead to indicators. But since such measurements are often institution-specific, comparability may be problematic.

The focus of indicators tends to shift over time – and this can also be witnessed in education and training. Initially, most attention is paid to input factors (not at least because this is often most easy to calculate). But after some time, interest grows to produce *indicators on outcomes*. In certain sectors – including education and training – the production of such outcome-based indicators is, however, much more difficult to achieve, for reasons of complexity, cost, intangibility and even lack of consensus about the value of particular outcomes.

1.1.2 Characteristics of indicators

So, what is an indicator? What is the difference – if any – with ordinary statistics? Let us make it clear immediately: *there are no official or universally agreed definitions of indicators* as they are currently used. In one extreme, indicators include all types of statistics

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and statistical tables (and their graphical derivatives) about the measurable attributes of a system, an organisation, a person, a product or a service: averages, frequency counts, totals, medians, upper quartile, cross-tabulations, etc. In another extreme, an indicator is nothing more than a signal that a threshold has (or has not) been reached – possibly even a non-numerical threshold (e.g. whether something is available or not).

In this report we stick to an interpretation of indicators as *a subset of ordinary statistics* – and thus by definition 'numerical'. Like other statistically obtained figures, indicators are meant to offer 'overall' information about the state of a system, an organisation, a product, etc. Good indicators provide a maximum of *broad and useful information* with a minimum of figures. The word 'useful' is very important here. Unlike many other 'neutral' statistics, indicators always ought to be defined with *a particular type of use* in mind. The analogy with the dashboard of a car may be useful here. There are thousands of statistics which could be provided about the actual performance of a car, but the dashboard provides only those which are useful (or even essential) to the driver.

A second distinction with other types of statistics is that indicators are meant to *facilitate relevant comparison*. Three types of comparisons should be mentioned. The first, and often most important purpose, is the changing value of the indicator *over time* (every month, quarter, year, etc.). The evolution of the fertility rate is a well-known example. In some cases, the absolute value of the indicator is of little interest compared to its timely evolution, which may become an indicator in itself (e.g. annual inflation), often expressed in percentages (e.g. 3.4% economic growth).

A second possible purpose of comparison, is *between different units* (organisations, systems, products, ...), even if these are of different size and complexity (e.g. schools). Because of this comparison rationale, indicators are often expressed as *an (arithmetic) fraction*, in which the denominator includes a size factor (e.g. pass rates in schools are calculated by dividing the number of successful pupils by the total number of pupils).

Another reason for comparison may be the need to *measure performance against a standard* (e.g. the number of qualified trainers), a goal (e.g. sales volume), or a reference value (e.g. an average assessment score) – we will use the term 'standard' for all of these situations. Again, the indicator may be expressed as a fraction (in particular if the standard is also expressed in this way, e.g. the fraction of graduates employed within 6 months), as a percentage of the difference between the standard and the actual value (e.g. percentage of goals that have been achieved), or – in some cases – as absolute numbers (e.g. the number of courses cancelled).

A typical characteristic of indicators – by some even considered as a criterion – is that they are constructed by using *two or more variables* of the system being considered (or a combination of a variable with reference values or standards). Thus, in this definition, the 'number of trainees' is a statistical measure, while the 'average number of trainees per course' is an indicator. In some cases, more than two variables may be needed to create composite indicators (e.g. an overall quality or performance indicator; the total score on a composite scale). As said, however, there may be situations where a simple calculation based on just one variable may qualify as a useful indicator (e.g. the total number of complaints). Often, in such cases, relating such figures to a 'size' factor or 'standard' would be irrelevant or defy the purpose of the indicator.

Some experts insist that all indicators should be *quantifiable*: real numbers that are to be interpreted according to the rules governing their formation. This certainly holds for most indicators; by defining indicators as a subset of statistics, in this report a similar logic is followed. But we recognise that there are cases were qualitative or graphical information may also serve as an indicator, in particular where it concerns complex systems. For instance, it may be difficult to define quantitative indicators for the organisation of a project,

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yet it is possible to verify that it has achieved its goals or not. In general, such more qualitative indicators always include an element of judgement and hence subjectivity.

This brings us to another area of debate: should indicators be restricted to what is *objectively measurable*? We do not think so, because in most cases full objectivity cannot be achieved. Banning subjective indicators would often make it impossible to get a full picture of a complex environment. In a set of indicators it is therefore often legitimate and desirable to include subjective data, such as information on user satisfaction. One has often to accept that indicator sets include some degree of subjectivity, part of which can never be eliminated. Adequate use and interpretation thus requires that all stakeholders agree that these subjective indicators are no direct measures but only aggregated perceptions by individuals of a certain state (as well as of their interpretation of the questions which are asked about it). Even some apparently 100% objective indicators that are based on hard data may have been designed based on a subjective consideration of what is important and/or what should be included/excluded from the data.

Anyway, 'subjective' indicators have to be accepted when 'quality indicators' are discussed. As mentioned in Chapter 2, quality is indeed often a subjective (customer-related) and context-dependent concept. Almost by definition this excludes the use of 'objective' indicators only.

1.2 A first classification of indicators

1.2.1 The "Message – Purpose" Model

The examples already given illustrated that there are many different types, formats and possible usages of indicators. This will become even more obvious throughout the remainder of this report. There are thus no easy ways to categorise all the different types of indicators, not even when only a restricted area such as education and training is considered.

Nevertheless, we feel that it would be useful to propose a first classification model in which many indicators can fit, and which is useful for the further discussion in this report. The model is based *on two important dimensions* of indicators. The first dimension relates to the information content, meaning and signification of the indicator; we will call this the *'message'*. The second dimension relates to the function and use of the indicator; this will be called the *'purpose'*. For both dimensions, the model includes a *scale* between two extremes.

For the 'message' dimension, the two 'extremes' are *purely descriptive / static / input-oriented* on the one hand, and *quality / dynamic / output-oriented* on the other hand. We may distinguish four main areas on the scale:

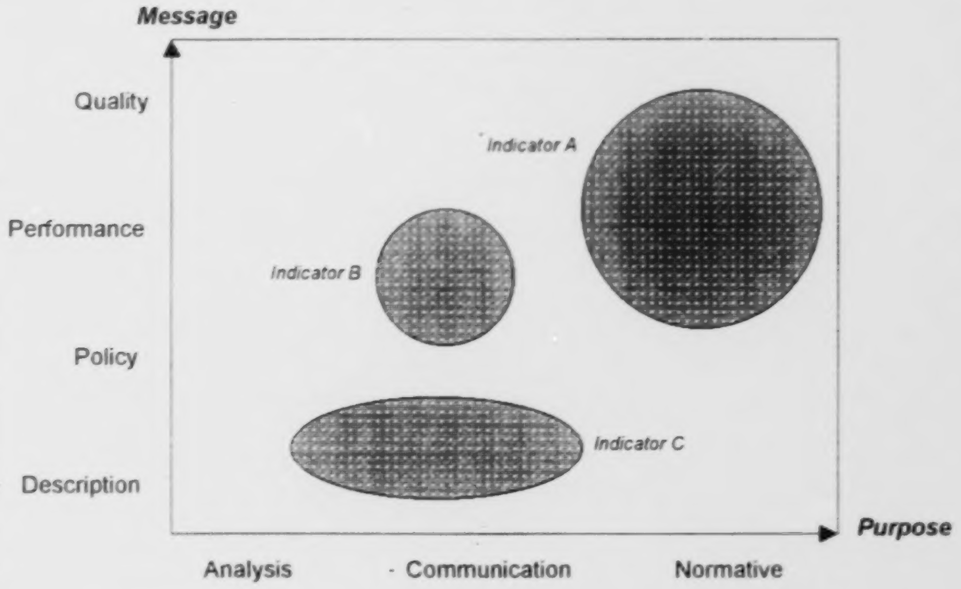
- Exclusively *descriptive indicators* (e.g. distribution of students across study disciplines);
- *Management and policy indicators* (e.g. trends in interest for particular course topics);
- *Performance indicators* (e.g. percentage of training courses that finishes on time);
- *Quality indicators* (e.g. the percentage of trainers with very good didactic performance).

In practice, of course, there are no sharp boundaries between these types of indicators; indeed, certain indicators may span a large area on the scale, depending on the context.

As regards the 'purpose' dimension, the two sides of the scale are *measurement, analysis, assessment / evaluation* on the one hand and *normalisation / standardisation* on the other. Here it may be useful to distinguish three areas:

- Indicators which are useful for measurement, *analysis*, assessment and evaluation (e.g. detect problems);
- Indicators that are mainly used for *communicative* purposes (e.g. point out trends);
- Indicators which have a *normative* purpose (e.g. for comparison with set goals or standards).

When we create a graph with those two dimensions, most indicators can easily be plotted as an area, as illustrated below.



The "Message-Purpose" model for indicators

Thus, most indicators occupy an 'area' in this model, rather than a specific point. It could be argued that an 'ideal' indicator should occupy a very large 'area' in this model, since this would imply that the indicator contains different messages and can be used for different purposes. It should be noted that most indicators are concentrated alongside the diagonal from the lower left to the upper right corner.

This model – which is not specifically tied to education and training – will be helpful as a reference frame for the indicators discussed further in this report. We stress, however, that it is a necessary simplification, and this mainly for three reasons:

- There are many other dimensions which could be considered, for instance the degree of objectiveness, the type of underlying calculations (%, fraction, ...), the subject considered (system, organisation, item, attribute), etc. We will return on these briefly in Section 4.3. For the purpose of this report, these other dimensions seem less important, but this could be the case in other contexts.

- For both dimensions considered, we have defined a 'scale' going from one extreme to another. In reality, the evolution across indicators is often not so linear as suggested by the model. Alternatively, the categories could also be considered as subsets of each other. This will be illustrated by the discussion of the 'message' dimension hereafter.

- Finally, the place of an indicator in an area of the model may vary depending on the context. For instance, a 'pass rate' may have a 'performance' or 'quality' character in one context, but a purely descriptive one in another.

1.2.2 The message dimension

As mentioned before, the 'message' dimension concerns the content, meaning and signification of the indicator. At the bottom end of the scale, we are close to 'ordinary statistics': (exclusively) *descriptive indicators* merely summarise aspects the subjects being considered. In fact, such indicators may also be called 'key data' or 'key figures'. Some typical types of descriptive indicators are:

- Frequency distributions across different topics/areas.
- Resource allocations.
- Counts of particular categories.

In general, descriptive indicators are relatively 'static' and 'absolute' – i.e. the message depends little on the context and time. Such indicators are also predominantly input-oriented (see Annex B for a short discussion of input and output characteristics) and use a limited number of variables (sometimes only one).

The second area on the scale of the message dimension are the *management and policy indicators*. These provide information that can be used for defining policy and strategy. The figures may suggest that current policy is appropriate and/or indicate areas that should be included in further policy developments (e.g. trends in interest for particular course topics). Some examples of such types of indicators are:

- Trends and growth/decrease figures.
- Figures showing the relationship with a certain threshold (reached, exceeded, ...);
- Indicators on non-critical process factors.

Obviously, the boundary between descriptive and policy indicators is not very sharp – and anyway depends on the context. Management and policy indicators are mostly based on a dedicated design that exceed simple data gathering. They yield a level of knowledge-construction that may anticipate or monitor decision-making. The problem-solving potential of a well-designed management or policy indicator can be very high.

This brings us to the third area on the scale – and the one that is most discussed in the literature: *performance indicators*. Before we discuss their meaning, two important remarks need to be made:

- There is no agreed definition of what a 'performance' indicator means. In fact, what is called a 'performance' indicator in certain publications, should preferably be classified as 'descriptive' or 'management' indicators. Even the OECD uses the term 'performance indicators' in a wide variety of situations. Thus, what are called 'performance indicators' in this report may not correspond with the concepts discussed elsewhere.

- The notion 'performance' seems to have a broader meaning in English than in its direct translations into other European languages. The very term "performance measurement" – which is at the basis of performance indicators – translates in many languages into terms which have a somewhat negative connotation, especially when it concerns the performance of individuals.

In this report we follow *a more restrictive definition* of performance indicators. They are figures that indicate the (degree of) performance for an important component of an entity. In most cases, performance indicators include a process or output element, which are often compared with input factors. For a racing car, the average speed achieved is an obvious example of a performance indicator. In education, the average period needed for students to obtain their degree, is also a performance indicator – at least when student performance is being considered (from the perspective of the institution it may be a management indicator).

Typical types of performance indicators are

- Figures about average speed, power, productivity, ... (mostly in industrial settings).
- Indicators in relation to delays, defects, problems, complaints, errors, ...
- Indicators on critical process factors.
- Indicators providing information on efficiency and effectiveness of operation.
- Indicators showing the degree of achievement of objectives, goals or plans.

Performance indicators can be defined for different levels and functions within an organisation (management, design, operational level, customer interaction, ...). This is related to the fact that these indicators are in most cases linked to *processes* within organisations or systems; it is possible to define processes at different levels and for different functions within organisations. For instance, performance indicators could be designed to indicate the effectiveness of the recruitment policy (high level indicator), but also for the error-free completion of internal forms (low level indicator). A special category of performance indicators are those which are linked to the achievement of particular goals, objectives or plans. Some of these goals could be related to particular processes (e.g. x% of students are to pass their exams successfully), but that is not necessary the case (e.g. degree of absenteeism).

Finally, we could describe *quality indicators* as particular performance indicators that refer to a quality characteristic or objective. We will return to this term in the next Chapter. It should already be stated that modern quality theory sees quality as a context and customer dependent characteristic; it follows that what are considered quality indicators in one context, are merely performance or even management indicators in another situation. For instance, in vocational training, the relation between training and subsequent type employment is important, and indicators on that relationship can be considered as quality indicators. But that relationship is much less important in initial, general education, where the same indicator may be useful as a policy information only.

Typical quality indicators are of the following types:

- Figures showing progress on the implementation of quality policy.
- Performance indicators in relation to quality goals and objectives.
- Figures related to the assessment of quality and performance as seen by the customer.

So far we have listed the different "message" types of indicators (descriptive / policy / performance / quality) on a linear scale, with the recognition that there is some overlap between the areas. This categorisation is, of course, only approximate. For instance,

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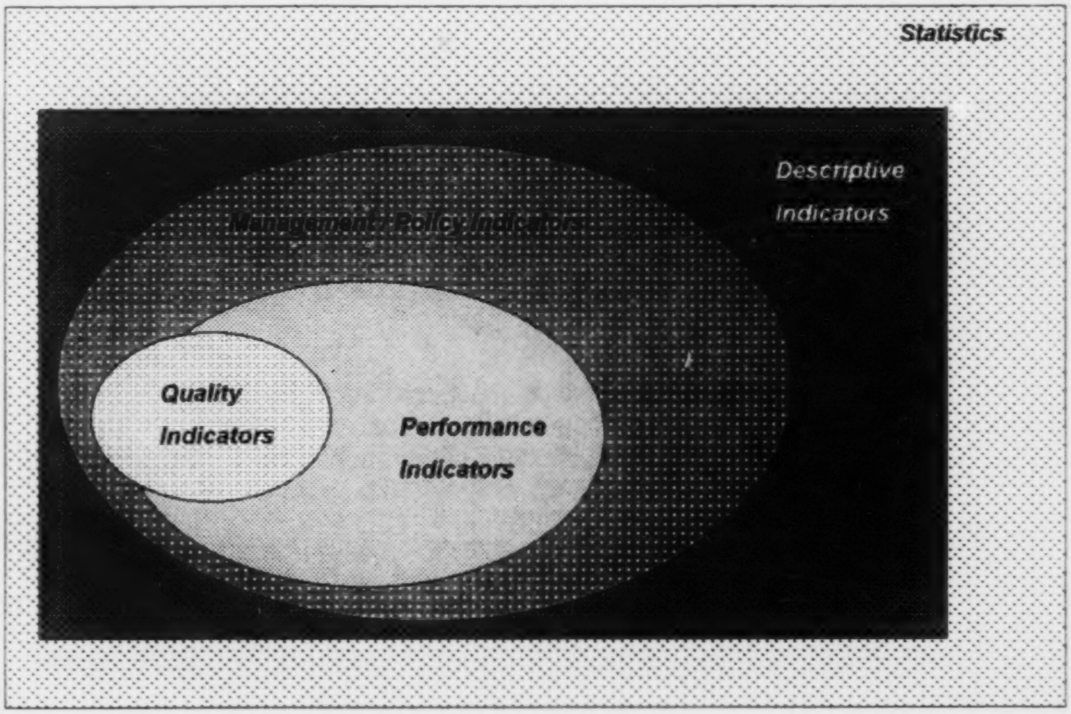
there are quality characteristics that may not be regarded as a 'performance', at least in the strict definition we have given to the term (e.g. the quality of a material, the quality of a design).

Instead of using a scale for the message type of indicators – a feature which was introduced to facilitate the construction of the "Message-Purpose" model – one may also see these as subsets of each other. Indeed, most quality indicators have performance characteristics, performance indicators are useful for policy analysis, and management indicators have of course a descriptive function as well. This can be displayed graphically as follows:



1.2.3 The purpose dimension

The second dimension of the "Message-Purpose" model concerns the function and use of the indicator. For the purpose dimension, we have retained three areas.

The first purpose of indicators concerns their direct measurement function. Measurement is undertaken to undertake some *analysis*, assessment, monitoring or evaluation. A typical example in a training context is the didactic score obtained by a trainer (obtained through a survey across trainees). Such indicators try to summarise the key outcomes of an often much more complex evaluation or measurement process. Typical types of indicators for assessment purposes are constructed on the basis of:

- Outcomes of survey results which are quantifiable or can be codified;
- Automatic measurements (tangible products);
- Frequency counts and cross-tabulations of errors, problems, deficiencies, ...

In general such indicators can only be interpreted within a specific evaluation context. For instance, the number of errors made per trainee only makes sense if you understand the type of training and the profile of the trainees.

The second area are indicators for *communication* purposes. These indicators are typically designed and used for informing relevant stakeholders or the outside world of the state of development of a particular system, organisation, process, etc. They may also be used for archiving and documentation purposes, in order to be able to detect trends over a long period. In the field of education and training, most 'indicators' published at national or international level (see Chapter 3) can be considered to fall in this category. We recall also our previously used analogy of the dashboard of a car, where the different types of lights and meters are displayed to inform the driver. More general, in a quality management context, such 'communication purpose' indicators serve to raise awareness, promote a culture of fact and figures, and may facilitate discussion between different parties (by making complex facts visible in a simplified way).

Typical applications of such indicators are:

- An input to discussions.
- Publicity and external communication.
- A basis for the establishment of action plans.
- Comparisons with the past.
- Pointing out new developments and trends.

Because of such utilisation, these indicators need to be easily understood and interpreted by all those concerned.

An even more specialised function of indicators is when they are used for *normative* or standardisation purposes – the other end of the 'purpose' scale. Such indicators are used to show to what extent the actual situation deviates from an established norm, predefined standards, set goals, etc. For instance, imagine a norm that 80% of courses should be considered at least 'good' by the trainers; the indicator itself may show that the actual result is 84%. As this example illustrates, the 'norms' may themselves be expressed in the form of an indicator. Indicators that are linked to strategic goals and operational objectives are mostly normative in nature. Other indicators of the same category are those that include comparisons with similar entities.

It ought to be clear that these purposes may overlap. In fact, just like for the 'message' dimension, one may not only consider the three areas as distinct groups on a scale, but also as a series of subsets. Nevertheless, it may not be desirable to have just one indicator that intends to serve different purposes and is used in different contexts. Since such an indicator is necessarily a compromise, none of the different forms of utilisation may be entirely appropriate.

1.3 Rationale for the use of indicators

1.3.1 Introduction

In the beginning of this report we mentioned already that there are two main driving forces for the use of indicators. On the one hand, there is a need for the owners and distributors of massive resources (such as in education) to obtain a viable picture of the system. On the other hand, there is an internal drive emerging from within organisations that see the need for more modern and professional management approaches – hence including measurement. The first drive is the oldest and still the most important one. In both situations, stakeholders will seek to define indicators that reflect as exactly as possible an aspect of the state of a system.

Over the last two decades the use of indicators has tended to increase in most sectors of activity, including education and training. This is not the place to discuss the origin of these movements; let it just be mentioned that this development results from a number of mutually reinforcing trends:

- the accountability and 'new public management' movements, calling for greater clarity and more objective measures of performance and control;
- the adoption of quality assurance and quality management approaches in organisations – and, more general, more professional management methods;
- the internationalisation of economy and society, creating a need for comparable data across borders for entities of quite different scope;
- the advances in information and communication technology, which have greatly facilitated the collection, gathering and comparison of information.

Such developments reinforce the need for 'hard', quantifiable data in an easily accessible and interpretable form. Hence, indicators emerge quite quickly.

Using indicators has also its side effects, and one of these is the temptation for perfectionism. In an ideal situation, it may be argued, a limited set of 'perfect' indicators might cover the whole spectrum. In practice this can never be achieved. Fortunately, this is not necessary nor desirable. Indeed, indicators are only a tool, not an end in themselves. It is an illusion to think that a perfect set of indicators can ever be constructed and act as a substitute for interpretation. Moreover, every effort spent on creating and developing indicators should always be balanced by the use that will actually be made.

1.3.2 Use of education and training indicators by public authorities

The use of indicators in education and training systems varies considerably across countries and even regions. It would have led us to far to make an inventory and comparison of the current state of the art (this is, however, done for international organisations in Chapter 3). When we consider 'public authorities' or 'governments' in the sequel, we generalise to a large extent. It should be obvious that most of the statements made will apply in very different degrees to different countries. Indeed, there are countries where education and training indicators hardly exist, whilst other ones have already a certain tradition in this regard.

As we will see in Chapter 3, there is currently a considerable investment of international bodies, supported by national administrations, in the development of "indicators" in the field of education and training. This reflects a growing belief among governments that the existence of such indicators might stimulate informed argument on desirable developments, e.g. in relation to curriculum development, teaching practice, services provided, funding levels, etc. This is the *'communication'* purpose of certain indicators (see Section 1.2.3).

Similarly, there has often been a desire to introduce indicators as a means to improve *quality*, in particular the improvement of educational and/or administrative (through the effect of highlighting particular strengths and weaknesses of institutions). Linked to this has often been the wish to improve the *accountability* of the institutions supported, by indicating in an "easy to communicate" way their quality and performance. In some cases, performance and quality indicators were intended to become the basis of an emerging quality control system (supported by other control mechanisms). Overall these efforts do not seem to have been successful, often because of disputes about the relevance of the indicators proposed.

One – sometimes hidden – reason for introducing quality or performance indicators has been to encourage *competition* among education and training organisations (or within them). The underlying assumption is that competition produces improved educational practice, encourages quality performance of individuals, improves efficiency, etc. Not surprisingly, such views are not very popular with education and training staff. In our opinion, there is increasing evidence that stimulating fair competition amongst VET institutions indeed leads to higher quality. The availability of system wide quality indicators is likely to facilitate such competition, because it leads to increased transparency.

However, the most important driving force for introducing and analysing education and training indicators has often been the increasing concern of public authorities for better, more effective and efficient spending of *resources* (the *'assessment'* and *'normative'* purposes). In particular since the 1980s, it would appear that this resource-focused concern has been the primary force behind the development of indicators. This statement can be illustrated by the fact that there is much more interest and effort going on in relation to performance indicators than on quality indicators (our definitions). In Europe and particularly North America, performance indicators have often been used to decide how and when to cut resources, and sometimes also to force changes in curriculum and allocation of education resources. It is interesting to note that in the 1993 reform of the Swedish higher education system, it had been envisaged that 5% of resources allocated would depend on a number of quality indicators; however, this has not yet (Summer 1997) been implemented and seems to be abandoned as an idea [Bauer & Kogan, 1997].

Another important reason – originally the most important one – for governments to develop indicators has been to produce a valid, reliable and complete picture of the performance and quality of the education and training system at different levels (the *'descriptive'* and *'management'* message). A picture that could be compared with the past situation and that could serve as a reference frame for comparison. And finally a picture that has a minimum of components, so that it can easily be understood and interpreted. Meeting this need can only be achieved through a combination of a more holistic and qualitative approach (based on reviews, audits, surveys, ...) combined with evidence provided by data, from which indicators can be constructed.

Other governmental objectives and considerations have been to make the financial and other reporting consistent across all institutions of a similar type – and even comparable with other types of organisations.

1.3.3 Introduction of indicators at institutional level

Although public administrations and governments are the driving force behind the introduction of indicators in education and training, there is a growing upstream movement from institutions as well. This is linked to the increasing recognition of the applicability of *professional management* methods in education and training institutions. Such management approaches rely much more on facts and figures: for monitoring the current situation, for defining policy and operational objectives, and for identifying important trends. Well-designed indicators can be very instrumental in this regard. For instance, a specialised training institute seeking to increase the number of handicapped trainees could develop and use indicators to examine whether it was successful in this regard. Or if the purpose would be the reduction of administrative expenditure, an indicator on the proportion of resources spent on administration is obviously useful.

It is true that in service environments (including education and training) it is more *difficult* than in industry to gather data, undertake automatic measurements and monitor process development. We have found, however, that there is often a surprising volume of information already available which, with some manipulation, can be turned into useful indi-

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cators. For instance, few institutions measure the efficiency of the activities undertaken. However, many documents are registered and/or date stamped, which would make it possible to measure at least duration and delays. Together with an estimate of manpower input, a first crude indicator of efficiency might fairly easily be constructed.

The first challenge for an institution interested in developing a useful indicator set, is not so much the definition of new information gathering mechanisms and measurements processes. Rather, it will need to *improve* standardisation, registration, and access of critical *data collection*, and possibly redefine its frequency. The extent of accuracy will depend on the purpose and envisaged use of the indicator.

It should be kept in mind that an institution's development can be described with indicators only to a certain extent. Indeed, many education and training institutes (in particular in general education) have a complex series of objectives that cannot easily be captured by a few quality or performance indicators. For instance, how to design an indicator on the 'cultural' or 'social' added value generated by a school?

Chapter 2: Quality and quality indicators

2.1 Introduction: the Quality movement in education

The concept of "quality indicators" cannot be fully understood without comprehension of the quality concept itself, in particular its modern significance. This first section highlights some points in relation to the origin and rationale of the quality movement, while the next one will deal with the concept of quality itself. The final section of this chapter then develops the notion of a "quality indicator".

Since the 1980s the topics *Quality*, Quality Assurance and (Total) Quality Management have become a central preoccupation of hundreds of thousands of organisations in Europe. The industrial world was first to recognise that much of the Japanese economic success could be attributed to the consistent focus on quality assurance and quality improvement. It is already more than a decade since European firms have started to adopt the concepts and methods of Total Quality Management – in short *'TQM'* – to meet the quality level which customers expect and for improving continuously the quality of products and services they deliver. Similar quality movements started to penetrate other areas, including service sectors. In particular since the early 90s – this varies somewhat by country – there is increased and renewed attention for quality issues in education and training.

It is not the purpose of this report to discuss the different factors which have contributed to the increasing emphasis on quality issues in the education and training world – and how governments, institutions and learners are coping with these challenges. These topics are dealt with in more detail in the recent CEDEFOP report *"Quality Issues and Trends in VET in Europe "* [Van den Berghe, 1996]. Therefore, only some general points are recalled in the next paragraphs.

The first observation is that quality is *not a new subject* in education and training. Institutions, teachers, administrators, policy makers and learners have always been concerned with quality. Indeed, the quality of an education or training provider eventually depends on the performance of the learners. Even without a formalised 'quality' approach such as *TQM* or *ISO 9000* [Van den Berghe, 1997], schools and training providers have needed methods, norms, procedures and standards to ensure the quality of their provision. But it is equally true that, traditionally, quality has often been interpreted fairly narrowly, focussing on particular features of the education and training services delivered.

This brings us to the second general observation: in education and training, just like in most other sectors, the dominant quality ethos tends to *change over time*. The current trend is one whereby quality concerns are increasingly focusing on the total effectiveness of an education and training provider, whether that is a vocational school, a university or a private training institution. This tendency mirrors the industrial developments where quality considerations are moving towards the *organisational* capacity to deliver high quality goods and services (the systems thinking behind the Total Quality Management concepts).

A third important observation is that the current concerns for quality in education are no isolated or temporary phenomenon, but are part of *broader macro-economic trends*. It does not imply that 'older' types of quality considerations (e.g. didactics) are no longer valuable. Rather, an effective 'Total' Quality strategy in education should be able to incorporate the more traditional quality perspectives.

A fourth general observation is that the 'new' approaches to quality assurance and management in education and training mean something *different for each type of education and training*. Simply stated:

- a shift in quality focus for general and vocational schools, from emphasis on the quality of the teacher towards the performance of the institution as a whole;
- the introduction of new or additional quality control mechanisms in higher education;
- the creation of quality assurance systems and performance related mechanisms in continuing education and training.

A common characteristic for all types of education and training is the increased concern for the performance of the learner (the effectiveness of learning) and the effectiveness and efficiency of the provider as a whole. This explains also the interest in TQM and quality assurance approaches.

A final observation: notwithstanding the increased emphasis on organisational factors as a prerequisite for quality assurance, it is recalled that no effective learning can take place without *high commitment of the teacher or trainer*. The corollary is that quality approaches – including TQM and ISO 9000 – are doomed to fail if they do not support the inner motivations of teachers and are able to sustain or increase their commitment.

2.2 Quality in Training

2.2.1 Quality concepts and terminology

Quality is now considered as a *multi-dimensional*, *relative* (customer dependent) and *context-related* concept. Therefore, it is not possible to give a unique definition that fits all circumstances. It is possible, however, to distinguish some important viewpoints and perceptions to quality:

- quality as excellence, as something special;
- quality can a measure of characteristics (product-oriented quality);
- quality as conformance to specifications (process-oriented quality);
- quality as the fulfilment of customer expectations;
- quality as optimal benefit/cost ratio (the value approach).

Such quality perceptions may apply, alone or in combination, to any type of product or service, including vocational education and training. But different people may hold different views about the same object. In the modern quality movement, the three last viewpoints on quality which predominate: conformance to specifications, customer orientation, and optimal value. They may be summarised in the slogan *"fit for purpose"*.

In order to achieve quality in a particular outcome, the quality of the preceding processes needs to be ensured. Two important concepts in this regard are *quality of design* and *quality of conformance*. Quality of design is the capacity of an organisation to design, plan and specify products and services that will be considered to be of quality by the end-users. Quality of conformance is the ability of an organisation to meet the design, planning and specifications, and to respect agreements. An organisation has to be strong in both areas if it wants to produce quality outputs all the time. In general this requires a systematic quality approach based on the principles of TQM.

The concepts "quality of design" and "quality of conformance" are fully applicable to the provision of VET. Quality of design refers to training specifications that meet the requirements of the particular profession, skill or job (*Are the programmes suitable and* *relevant?*). Clearly, the involvement of social partners and/or the customers will facilitate this task. Quality of conformance is the capacity of a training provider to deliver the programme and meet the specifications (*Is the provider performing well?*). It is at this level that quality assurance and quality control mechanisms play an important role.

2.2.2 Quality perspectives in education and training

Before the emergence of 'modern' quality approaches and concepts, the education and training world had already developed its own quality tradition. The different viewpoints from which quality in education and training has been considered can be summarised as follows [see e.g. Van den Berghe, 1995]:

- Quality from a *didactic and/or pedagogical* point of view (education quality seen as the optimisation of the teaching and learning process).
- Quality from a *(macro)-economic* point of view (education quality seen as the optimisation of the education and training costs).
- Quality from a *social or sociological* point of view (education quality seen as the optimisation of the response to social demand for education).
- Quality from a *customer* point of view (education quality seen as the optimisation of the demand).
- Quality from a *management* point of view (education quality seen as the optimisation of the organisation and processes of education).

The order in which these different viewpoints are listed reflects to some extent the shifts in emphasis over the last decades in many European countries. However, it is not so much a question of replacing "old" paradigms, but rather one of adding "new" dimensions – which reflects the growing complexity of the education system and the objectives it has to meet.

Although the term "quality" is gradually finding its way into the *VET legislation* of European countries, the notion is not necessarily well explained – leaving some ambiguity as to which perception of quality has been in mind of legislators. Some formulations seem to suggest that quality is considered as an absolute, measurable concept. But recent laws in some countries support more the view that quality in education and training must be related to the values and aims and objectives of three user groups: the students, the labour market purchasers, and the society in general. Since these groups may have different expectations and needs, political objectives eventually tend to become the measuring rod for quality. Thus, attempts to define quality precisely in education and training lead to political discussions and choices.

Thus, while an exact quality definition – which essentially comes down to specifying the criteria for the design of programmes ("quality of design") – is somewhat problematic in a VET environment, there are less problems with the notion of *quality assurance*: how to ensure that the quality specifications can be met. This process logic that is less subject to political debate, but has more to do with identifying the factors and operational characteristics which are most effective.

2.3 Defining quality indicators

As is obvious from the previous discussion, the meaning and value of "*quality indicators*" will depend strongly on the context (a phenomenon which applies to other areas than education and training as well). In Chapter 1 we described quality indicators already as "*performance indicators that refer to a quality characteristic or objective*". A more precise definition is proposed below.

"A quality indicator is a figure which is helpful for the assessment of a quality characteristic or the achievement of quality objectives"

Let us briefly comment on this definition. The first thing to notice is that 'quality' itself is not defined. The different perspectives – and possibly disagreements – on quality also apply to 'quality indicators'. What is a quality indicator for one person, may be an 'ordinary' indicator for another. It must be said, however, that in VET the debate is not so much about whether something impacts on quality, but rather its relative importance. For instance, nobody would dispute that attitudes developed by pupils is a quality characteristic of their competence development, but teachers, employers and pupils themselves are likely to disagree about the relative importance of this (for instance in relation to knowledge acquisition).

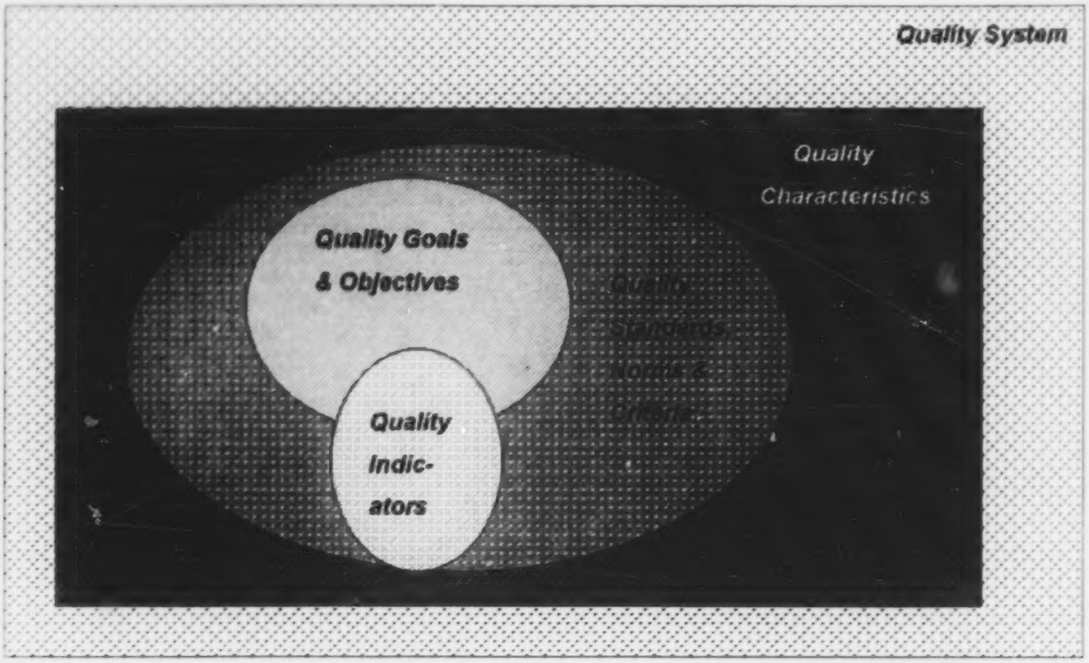
The underlined words in the definition also require some comments:

- *"figure"*: this relates to the view, taken in this report, that an indicator should be numeric;
- *"assessment"*: this reflects the fact that quality is not seen as something absolute, but depends on the views of the user;
- *"characteristic"*: this refers to a product or the output of a service; in general it reflects the "quality of design" performance (e.g. *"How adequate is a programme for a particular feature?"*);
- *"objectives"*: this concerns standards (internal or external) or set objectives which have to do with quality aspects; often these reflect the degree of "quality of conformance" (e.g. *"Was the programme delivered on-time?"*).

In the first chapter we have already shown the link between quality indicators and other types of indicators: performance indicators, management/policy indicators and descriptive indicators. It seems also useful to relate quality indicators to some other quality concepts, such as quality standards or objectives. These relationships are symbolically displayed in the graph on the next page, which shows that:

- quality indicators are only a small part of an overall quality system;
- quality indicators are only one of many representations of quality characteristics;
- some quality standards, norms or criteria can be represented as quality indicators themselves;
- some quality goals and objectives can be expressed in the form of particular values of quality indicators.

Overall, the graph indicates that quality indicators are no substitute for a quality system or for quality standards; they are a tool that can help in assessing – and hence improving – quality.


Quality System
Quality Characteristics
Quality Goals & Objectives
Quality Standards, Norms & Criteria
Quality Indicators

When considering the "purpose" dimension of our "Message-Purpose" model, we are tempted to conclude that quality indicators in education and training have already been introduced for each of the three main purposes, but in particular for *communication and assessment purposes*. Some attempts to use quality indicators in a normative context have been undertaken, for instance in higher education, but these have met much resistance. This can be related to the fact that (1) the use of quality indicators in education and training is still in its early stages, and (2) there is often lack of consensus about the essential quality characteristics, as well the possibility to measure these and represent them in a numerical format.

In conclusion, quality indicators are – or ought to be – carefully designed measures that provide reliable information about particular quality characteristics of a system or about the attainment of certain quality objectives. The value and usefulness of particular quality indicators can only be assessed if there is clarity about the underlying quality concept.

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Chapter 3: International VET-related indicators

3.1 Introduction

This chapters considers indicators – quality indicators and others – which have been developed for Vocational Education and Training (VET) at European level. Please note that, despite the long tradition of gathering statistics on education and training at European level by organisations such as Eurostat, OECD and UNESCO, the emergence of international indicators is a relatively *recent development.* This will be obvious from this chapter.

Not unexpectedly, another important finding from our research was that most international education and training indicators concern the *general education* system. Sometimes vocational education is covered, but not necessarily in a transparent way. Far less attention has gone to vocational education and training, both at initial and continuing level. One important reason seems to be that information on VET is more difficult to collect and process than on general education. This holds in particular for continuing vocational training (CVT). Other reasons are the considerable differences between European countries in the organisation and characteristics of the VET system. This makes it very difficult to develop meaningful internationally comparable indicators. A third reason for the limited number of international VET indicators is that, in many countries, the VET system is undergoing rapid change; this would render time series of indicator values quickly obsolete.

Detailed information about these differences and developments can be found in many other CEDEFOP documents, and there is no point in repeating these here. We would like, however, to draw attention to the distinction between "initial" and "continuing" vocational education and training. In this report, we define *"initial vocational education and training" (IVET)* as the vocational part of the secondary education system, i.e. leading to recognised qualifications at that level. In Europe, we have two main types of such systems. One is mainly or exclusively school-based, with teaching predominantly being given in technical or vocational schools, which are firmly embedded in the traditions and organisational forms of the overall national school system. The second type is predominantly apprenticeship based, with a large part of the training taking place within, and under the responsibility, of firms.

By contrast, *"continuing vocational education and training" (CVET)* consists of vocational training programmes and courses for people who are (or could be) at work and/or have already some kind of general or vocational qualification (in some countries, such provision is called "adult education"). Although part of such training could lead to recognised qualifications, continuing education and training displays many characteristics which make it different from IVET, such as:

- the existence of a very broad range of providers of different types, both public and private;
- programmes are mostly measured in terms of days and weeks, rather than months and years;
- training that is often targeted at specific groups: unemployed people, workers from certain sectors;
- the existence of several forms of state intervention or subsidy.

In reality, the boundary line between initial and continuing vocational education and training is not clear, in particular when:

(1) CVET is delivered by institutions also providing secondary education level qualifications,

(2) when it leads to qualifications at secondary rather than advanced level, and/or

(3) when it is fully subsidised by the state, or when its delivered immediately after a first qualification.

Although a discussion of national education and training indicator sets is beyond the scope of this report, we considered it useful to give a French and a UK example. In the annual French publication about the state of the education and training system, *L'état de l'Ecole*, the importance of 'results' and 'outputs' – and hence quality – has gradually increased and been refined over the years. The most recent edition includes 30 indicators, of which several could be considered as quality or performance indicators [Ministère de l'Education, 1996]:

9 Relationship between qualifications and salary
10 Relationship between qualification level and social position
13 Performance in French and mathematics of pupils entering the *sixième*
19 Differences in lycée results (succes in *baccalauréat*)
20 Relationship between secondary schoool qualifications and career patterns
26 Relationship between higher education qualifications and career patterns
29 Continuing education activities
30 Professional advancement of employees having received continuing education

Please note that the 19the indicator on differences success rates follows a process logic: it takes into account input factors (i.e. age and social background of students) in order to measure the quality of these schools. The term actually used is the 'added value'.

A typical British phenomenon is the appearance of '*league tables*' about all kinds of education establishments (including universities). Such league tables have appeared in the press (e.g. the Times, the Guardian, the Times Higher Education Supplement, ...), and may also be available on the Internet. The league tables are in general based on indicators constructed from publicly available data sources. As an example, we give some indicators used by the Guardian for classifying certain types of secondary schools [The Guardian, 1997]:

1. % of 15-year-olds getting 5 or more grades A-C
2. % of 15-year-olds getting 5 or more grades A-C ranked by improvement over last year
3. Average point score per A/AS level entry

If the success rate of pupils on certain examinations is considered as a quality outcome, such indicators are definitely quality indicators. It goes without saying that such indicators may only be useful for comparison across schools, if grades are delivered in a similar and standardised way (which is often not the case in European VET institutes).

These two small examples already illustrate (1) the possibly very different approaches (both in message and purpose) which education and training indicators may serve, and (2) the fact that at national level, it is more easy to define relevant and specific quality indicators than at international level. In the remainder of this report we will only look at international VET indicators. We will start with the outcomes of the OECD INES project, because it is the one best known, and no doubt the one initiative that has so far had the most impact.

3.2 The INES project of the OECD for education indicators

The OECD was founded to promote economic growth, employment, and a rising standard of living in the Member countries. It has developed a reputation for its in-depth analyses in all sectors of economic importance, including education and training. A particular feature of many OECD studies is their emphasis on data and figure. To that end, the OECD has developed over the years a number of very important databases with international statistics. In many economic areas, the *'OECD indicators'* are well known and are often considered as a standard.

Since OECD countries spend about 12% of total public resources on education, the overall economic importance of education is not in doubt. Already more than a decade ago it had become clear that gathering, classifying and publishing education statistics was not enough. Like in other working areas of OECD, it was felt that the development of a limited set of *international education indicators* would help to strengthen the knowledge about the performance of education systems – and hence be instrumental in the implementation of effective education policies. These considerations led to the launch of the *INES* project. The overriding goal was to develop, in a number of successive phases, a limited set of comparable indicators of national education system (including training elements where available). Outputs were to be achieved through a collaborative framework consisting of a Technical Group and specialised networks responsible for the development of indicators in specific areas.

The INES project began in 1988 with a feasibility study. By 1991 a first, preliminary set of indicators was developed, and published in 1992. Although this first set was not ideal, it signified a distinct political will in the OECD area to build up a comparative knowledge base for education. The publication of *"Education at a glance"* in 1992 attracted a lot of attention from the mass media, causing pressure to produce a second, more up-to-date and reliable edition, with increased comparability of data.

Since 1992, three further versions have been produced [OECD, 1996], and the fifth one was in preparation when this report was finalised. Throughout the different stages, the reliability, comparability and political relevance of the indicator sets were systematically enhanced, and many new indicators were developed. Data collection was improved and speeded up, in collaboration with EUROSTAT and UNESCO. Whilst the second edition was essentially an improved and more up-to-date version of the first edition, the third edition had several *new indicators*, as well as a larger coverage of countries.

The fourth edition (1996) also included several new indicators. However, in order to keep the publication manageable, some existing indicators were dropped, in particular those which were not expected to change a lot from one year to another. An important new development was that out of the 43 indicators, almost one third concerned *outputs and outcomes* (in the previous editions, this proportion had been much lower). These 'performance' or 'quality' indicators are listed below:

R6	Student achievement in mathematics and science
R7	Student differences in mathematics and science achievement
R9	Difference in achievement between 7th and 8th grade in mathematics and science
R10	Gender differences in mathematics and science
R30	Literacy and the adult population
R31	Adult literacy by level of educational attainment
R32	Literacy skills of younger versus older persons
R33	Adult literacy by gender
R21A	Unemployment by level of education
R22B	Youth unemployment by level of education
R22	Education and earnings from employment
R24	Unemployment rates of persons leaving education

It should be noted that the 'achievement' and 'literacy' indicators were derived from the IALS and TIMSS surveys – see Sections 3.5.2 and 3.5.3. below.

The 1996 edition of '*Education at a Glance*' was an OECD best-seller, and the interest for the publication and its further editions remains high. The INES-project currently involves the continuous cooperation of education authorities, public servants, researchers and statisticians in 30 countries. Considerable parts of the publication and the underlying statistics are available freely from the OECD web site.

The *fifth edition* – under preparation when this report was being finalised – would have the following features (based on indications provided):

- More attention to the analysis and discussion of the indicators.
- A relatively stable number of indicators, based on an overall policy to (approximately) replace one third, to keep one third and to modify/redefine one third of the indicators.
- The new indicators would cover areas such as the learning environment, teacher time, equity of opportunities, the cost per degree delivered, and continuing education and training (CET).

The CET indicators would cover:

1. Patterns of participation in CET (participation frequency, number of courses, duration).
2. Demand characteristics of CET (by age, genders, level of education, labour market status).
3. Supply characteristics of CET (providers, media of instruction, financial support, barriers).

However, since most of the data sources are the IALS survey, the number of countries concerned is very limited.

Although the attention to quality aspects has increased over the different versions, *the number of 'real' quality indicators is still very modest.* The development of finer and more specialised quality indicators would theoretically be possible, but would face two main problems. First, we think it would be almost impossible to get international consensus about specific quality characteristics, and/or the relative importance of certain quality aspects. Secondly, the cost and resources required to collect and process data on quality issues would be very considerable.

Some of the lessons already learned from this ongoing project are that *good indicators improve the quality of the debate.* There is strong interest in good, undisputed indicators – 'Education at a Glance' has even been part of the Parliamentary debate in some countries. There are already some indications of change that are attributable to the publication, and further research has been stimulated. National adaptations (e.g. in Flanders, see De Groof e.a., 1995) have already appeared. Last but not least, the success of this project and the acceptance of the validity of the indicators seems to be directly linked to the shared ownership of the Member States.

3.3 The European Union

3.3.1 Introduction

Like the OECD, the European Union has a long tradition of gathering, processing and analysing data in a wide range of areas, both in quantitative and qualitative form. The key actors in this process have been *EUROSTAT*, the Luxembourg based statistical office, in cooperation with the different Directorate Generals (DGs) of the *European Commission* (EC) in Brussels. In the field of education and training, the most relevant department is DG XXII (responsible for education, training and youth), but some activities in relation to education and training are also managed by other DGs, in particular DG V (training as part of the Social Fund activities). Some data collection – and even more data analysis – is undertaken in EC related bodies such as *Eurydice* (see Section 3.3.2 below), the *European Training Foundation* (see Section 3.3.4), and CEDEFOP (mainly of a qualitative nature and focused on particular issues). There has also been some data collection in relation to, or as part of, European cooperation programmes (*Leonardo* and *Socrates* and their predecessors).

Through EUROSTAT, a large number of statistics on European education systems has been gathered over the last decades. The "basic" data gathering process in the Member States for the European Union, the OECD and UNESCO is undertaken on the basis of the same questionnaire to Member States (the so-called *UOE-questionnaire*), in order to avoid that Member States need to provide the same data several times. Each of these bodies processes this data in its own way and for its own purposes. Eurostat also undertakes additional surveys that contain data relevant to education and training, such as the Labour Force Surveys, the Family Budget and the Eurobarometer surveys. Many of those data – where they relate to education and training – are synthesised in the Eurydice publications (see below).

Because of this systematic data gathering process, basic data on *initial vocational education* has been available for quite some time already, but it has suffered from a number of drawbacks. First, the differences between Member States' vocational education and training systems are often hidden in comparative statistics. Secondly, part or whole of vocational education and training may take place after compulsory school age, which affects often the availability of data. The same applies to vocational training that is fully or predominantly organised outside the traditional school system (e.g. apprentice system). Given such methodological and reliability problems, few indicators on initial VET had been proposed in the past (since they would have led to false interpretation). As the next sections will show, however, there are some recent attempts to address these complexities and to construct some reliable indicators.

As regards *continuing vocational education and training*, international comparisons are of a much more recent nature. Even at national level, the data is often incomplete or even lacking. Over the last few years, the *Force* and *Leonardo* programmes have been supporting a number of studies and surveys in order to develop a better basis for international comparisons (see Section 3.3.3 below).

The next sections describe a number of key trends in relation to the development of comparable VET indicators at EU level.

3.3.2 Eurydice work on Key data on education in the European Union

Eurydice is a key education information and analysis network of the European Commission and the EU Member States. It consists of a European unit in Brussels, and national units (as well as some regional ones) in the EU Member States. Over the last decades, the network has developed a track record in terms of analysing differences and similarities in the EU education systems, and in providing education policy makers with up-to-date and reliable information. The Eurydice network is currently sponsored via the *Socrates* Programme.

Over the last few years, increasing attention is being paid to the production of comparable information about European education systems, both of a descriptive and quantitative nature. The most visible output of the trend has been the report "*Key data on education in the European Union*", of which the second version (the most recent one when this study was finalised) was published in 96 (it is labelled '95', referring to the most recent data included) [Eurydice European Unit, 1996]. This document contains a wealth of data on the current state of the European education systems.

The report differs from the OECD report *Education at a glance* in a number of respects:

- The information is (currently) limited to EU countries.
- Only about 20-25% of the items covered are common with *Education at a glance*; in fact Eurydice has sought to complement the INES data and has used special EUROSTAT surveys as well as specific information gathered via its own network.
- The focus of the 'Key data' is less on "indicators", but rather on overall comparisons. The quantitative information is displayed in the form of a graph.
- Each graph is briefly discussed and the main outcomes are highlighted.
- There is a thematic dossier included with very specific and detailed information (the 1996 edition concerns teachers).

Only a few of the Graphs included relate to vocational education. These are listed below:

E3	Percentages of pupils in General and Vocational Upper Secondary Education
E6	Changes in the numbers of girls per 100 boys in upper secondary vocational education
E8	Number of girls per 100 boys in upper secondary vocational education
E11	Annual number of class hours in upper secondary vocational education
E23	Number of girls (per 100 boys) obtaining vocational upper secondary school leaving certificates
J1	Contractual working time and annual number of teaching hours [also for vocational education at upper secondary level]

There are also a few performance or quality related figures:

A8	Unemployment and level of education (no distinction between general and vocational education)
D11	Average duration of primary education (in comparison with theoretical education
E20	Percentages of 20-year-olds holding a certificate of upper secondary education
F10	Percentages of 30-year-olds holding a higher education qualification
G1	Educational expenditure as a percentage of GDP
G3	Expenditure per pupil as a percentage of per capita GDP
I2	Movement in pupil/teacher ratios by level of education in the public sector

Interestingly, most of these figures take the form of an indicator (unlike most of the other items in the report).

The third, 1997 version of the report will also cover a number of Central European and Baltic countries. The special theme will concern the financing of education, involving all the different actors (central, regional and local authorities, educational institutions, pupils, households, firms; not-for-profit organisations, etc.) as well as the forms of financing (grants, donations, school fees, scholarships, loans, salaries etc.). The specific quantitative information would be based on the use of (1) the financial part of the renewed *UOE* questionnaire, and (2) EUROSTAT's Community surveys (Household Panel and Family Expenditure surveys). These surveys aim to record over a given period (week, month or year) the total consumer expenditure of households, including the expenditure on education. It is as yet unclear to what extent the specificity of vocational education (particularly the financing of apprenticeship schemes) would be adequately taken into account.

From 1997 onwards, Eurydice will adopt a new policy. Every other year (i.e. in 1999, 2001, 2003,...) there would be a 'core' publication with the most standard statistics and indicators (i.e. comparable with the current versions, bit without the thematic dossiers). This document would remain relatively stable as regards the content, which has been defined in close cooperation with the Member States. The main developments envisaged for the 'core' publication are the introduction of data from Central and Eastern European countries, and information about 'special' education (for handicapped pupils). In the other years (1998, 2000, 2002, ...) the 'Key data' report would focus on a special theme.

3.3.3 European VET-related indicators

In Section 3.3.1 we mentioned already that the production of internationally comparable indicators and statistics regarding vocational education and training has been more problematic than for general education. As regards *initial vocational education*, Section 3.3.2 showed that some basic European statistics are included in the '*Key data*' document. But comparable data on some aspects which are highly relevant and specific to vocational education – such as the transition between school and work (a topic which also the OECD is working on), the involvement of the social partners and the relevance of the vocational qualifications for the labour market – are hardly available at EU level (at national level, the situation is often somewhat better).

The situation is even more difficult in the field of *continuing vocational education and training*. A first attempt to develop some indicators resulted in the 1994 *Force* publication *"Tableau de bord de la formation professionnelle continue"* (Force was a European co-operation programme on CET, which is now integrated in the Leonardo da Vinci programme) [Commission Européenne, 1994]. Despite numerous methodological difficulties, a first set of European indicators was produced:

1. Percentage of employees receiving training
2. Average duration of training per employee
3. Average duration of training per trained employee
4. Average cost of training per employee
5. Average cost of training per employee trained
6. Relative cost of training in relation to total salary mass

The report also included a first proposal for a common framework of indicators on CET. These are listed below (instead of 'CET' we used the term 'training' throughout).

1. % of employees benefiting from legal training leave arrangements
2. % of collective employment agreements including a clause on access and participation in training
3. % of participants in on-the-job and off-the-job training
4. Average duration of on-the-job and off-the-job training
5. Breakdown of training activities by target group, size of enterprise, type of training, level, ...
6. % of enterprises employing training staff
7. % of enterprises with training activities / with a training plan
8. Volume of training (training hours)
9. Average duration of training by employee, enterprise size, type of training, sector, ...

10. % of training provided internally/externally
11. % of training within or outside working hours
12. % of training leading to a recognised qualification
13. Overall spending on training (and in relation to GDP)
14. Average cost of training by position, type of training, sector
15. Training as a % of the overall salary mass (and differences, e.g. by enterprise size and sector)

At that stage, precise indicators and methods still needed to be worked out.

Since the launch of the Leonardo da Vinci programme, EUROSTAT and DG XXII intensified their efforts to expand and refine the indicators available in the field of VET. In this regard, a major publication has been planned for late 1997 – early 1998: "*Key Data on Vocational Training in the European Union*" [Eurostat, to be published]. When our study was finalised (Summer 1997) the publication was not yet finalised, but the main structure had been fixed. Five Chapters will be included:

A: Demographic trends, educational attainment and the labour market
B: Initial Vocational Education and Training Programmes
C: Continuing Vocational Training in Enterprises
D: Self-employed: participation in training in the past four weeks
E: The European Community Programmes and Initiatives

Like in Eurydice's 'Key data' document, the information of this new publication is based on a number of surveys and data collection processes from Eurostat in cooperation with the EU Member States.

Given the focus of our work, it seems relevant to list here the full list of indicators planned (please note that the list and the definitions were provisional at the time of writing):

Demographic trends, educational attainment and the labour market

A1 Trend in the median age of the EU population
A2 Changes in the age structure of the population of working age
A3a Educational attainment: comparison by age groups
A3b Changes in educational attainment at upper-secondary level: comparison of two age groups
A4a Employment rates by educational attainment and sex, 30 to 59 year olds
A4b Employment rates by educational attainment, 30 to 59 year olds
A5 Unemployment rates by educational attainment and sex, 30 to 59 year olds
A6 Young people between 16 and 18 years old in education or not in education
A7 Unemployment rates by educational attainment and sex, 20 to 29 year olds

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A8 Unemployment rates: comparison between those with only basic education and those completing additional vocational education and training (VET), 20 to 29 year olds

A9 Vulnerability to unemployment: comparison between those with only basic compulsory education and those completing post-compulsory VET, 20 to 29 year olds

Initial Vocational Education and Training (IVET) Programmes

B1 Young people aged 15-19 in education by type of education.

B2 IVET programmes (16 graphs)

B3 Participation rates in (IVET) among the population

B3a Participation rates among the 15-19 year olds population (% of population in IVET)

B3b Participation rates among the 20-24 year olds population (% of population in IVET)

B4 Distribution by age group (% of participants in IVET)

B5 Distribution by gender (% of participants in IVET)

B6 Where IVET takes place (% of participants in IVET)

B7 Duration of IVET programmes (% of participants)

B8 Distribution by ISCED level (% of participants in IVET)

B9a Access to programmes of a higher level (% of participants in IVET)

B9b Type of access to programmes at a higher level (% of all participants in IVET)

B10a Certification (in % of participants in IVET)

B10b Funding (in % of participants in IVET)

Continuing Vocational Training (CVT) in Enterprises

C1 Percentage of enterprises, employing more than 10 people, providing CVT

C2 Percentage of enterprises providing CVT by enterprise size

C3 Percentage of enterprises which provided CVT by sector

C4 Percentage of enterprises providing CVT with training plans /budgets

C5 Percentage of enterprises providing CVT with training plans /budgets by size

C6 Percentage of enterprises which provided CVT plans/budgets by sector

C7 Forms of CVT offered by enterprises providing CVT

C8 Subjects of CVT

C9 Percentage distribution of training hours by type of provider

C10 Costs of CVT courses as a percentage of total labour costs of all enterprises

C10a Average CVT cost per participant

C10b Average CVT cost per participant in "Purchasing Power Parity"

C11 Participant rates in CVT courses by enterprise size (all enterprises & enterprises providing CVT)

C12 Average time spent on CVT courses by participants by enterprise size

C13 Participation rates in CVT courses by sector (all enterprises & enterprises providing CVT)

C14 Time spent by participants on CVT courses by sector

C15 Percentage of employees participating in CVT courses

C16 Average time spent on CVT Courses

C17 Percentage of participants in CVT courses by occupation in all enterprises

C18 Time spent on CVT courses by occupation for all enterprises

C19 Percentage of participants (male and female) in CVT courses in all enterprises

C20 Average duration spent on CVT Courses (male and female)

Self-employed: participation in training in the past four weeks

D1 Self-employed as a proportion of all persons in employment

D2 Distribution of self-employed and employees by sector

D3 Occupations of self-employed and employees

D4 Training in the past four weeks – Participation of 30-59 year-olds

D5 Training in the past four weeks – Participation by educational attainment (30-59 year olds)

D6 Training in the past four weeks – Participation by occupation (30-59 year olds)

D7 Training in the past four weeks – Participation by age, (30-59 year olds)

D8 Training in the past four weeks – Participation by gender (30-59 year olds)

The European Community Programmes and Initiatives

E1 European Social Fund (ESF) funds for training 1995-1999 (ECU per inhabitant).

E2 Leonardo da Vinci Programme and its predecessors – Yearly budget 1987-94

E3 Leonardo da Vinci committed Funds 1995 and 1996

In most cases, the data will relate to 1993-1995. Some concern 12, other 15 EU countries. In general, the information will be presented under the form of a graph and/or a table. Please note that the specific indicators on CVT are approximate, since the surveys on which they are based are not optimal.

An inspection of the list shows that most of these indicators are purely 'descriptive' or 'policy' indicators that say little about effectiveness or quality. However, there are several performance indicators, particularly in Chapter C (C1-C6; C10-C16; C20), and some in Chapters A and B. Only a limited set of these indicators could really be considered as quality indicators, because they say something about the quality of VET provision. This concerns in particular the indicators from Chapter A that relate (un)employment to educational attainment. Indicators B9a, B9b and B10 could also be considered – from a certain perspective – as quality indicators.

3.3.4 Other activities at EC level

Throughout the European Commission, many other DGs are actively involved in the publication of international comparisons about a wide range of topics (where it concerns detailed statistics, this is mostly done in cooperation with EUROSTAT, although other international data sources (e.g. OECD) are also used). Often, such comparisons relate to, or bear some relevance to education and training.

It would lead us to far to discuss all these developments, but let us give some examples. For instance, there is information available about the perception of youth and families about schools. DG V also produces a lot of information about social affairs and training for unemployed people. DG XIII has published many European indicators on research and development. And DG I is funding a Phare project for the training of Central and Eastern European administrators to complete the UOE questionnaires.

3.4 VET Indicators of the European Training Foundation

The mandate of the European Training Foundation (*ETF*) is to promote cooperation between the European Union and the 'Partner' countries – Central and Eastern Europe, the states which previously constituted the Soviet Union, and Mongolia – in vocational training, including the coordination of assistance by the Union, its Member States and third parties in the sector. More specifically, the European Council has requested the ETF, which became operational in 1995, to assist in the definition of training needs and priorities in cooperation with the relevant authorities. This should include the provision of targeted information on current initiatives and future needs.

In order to fulfil this mission, the ETF has launched a number of activities. One of these is the establishment of a series of reliable VET indicators on VET, initially in the countries of Central and Eastern Europe. This so-called '*Key Indicators*' project is carried out with the assistance of a network of National Observatories that have been established in each of the Partner countries. The main aims of this project are:

- to provide evidence on the characteristics, problems and challenges of the VET systems in the partner countries, and
- to measure the VET system's performance, e.g. in terms of its responsiveness to the needs of the labour market or of its capacity to endow people with vocational qualifications;
- to show – through the regular updating of the key indicators – the trends of VET systems and outcomes of implemented policies in the partner states.

The main strategy adopted was first to establish a limited list of 'key indicators' that provide basic information on the VET and labour markets in the partner states. The definition of the indicators was based on the analysis of the work undertaken by Eurostat, the OECD-INES project, and the Employment Observatory on Central and Eastern Europe (of DG V of the European Commission). During the development of the project, work being undertaken by other international organisations – i.e. UNESCO and the World Bank – was also considered.

The first set of indicators identified by the ETF was meant to describe the place of VET within the socio-economic system of the partner states and measure its effectiveness. The list focuses on mainstream vocational education and training – on VET within the frame of the regular education and training system – and on labour market trends. This basic list of key indicators is as follows:

A. Access and Participation in VET

1. Participation in [general/vocational/higher] education of 14 to 19 year olds.
2. Participation in VET of 14 to 19 year olds by type of vocational/technical school
3. Relative weight of vocational education and training at the upper secondary level
4. Labour market, education and training situation of 16 to 25 year olds
5. Qualification levels of the population of 25-29 year olds

B. Outcomes of VET

6. Drop-outs from Vocational Education and Training
7. Percentage of graduates of VET to population at theoretical age of graduation
8. Employment status of those having completed VET courses

C. Expenditure on VET

9. Total expenditure on VET
10. Public expenditure on VET
11. Public funds for VET by level of government

D. Employment trends

12. Employment trends by economic branch
13. Unemployment overall and by region
14. Unemployment rates by qualification level of the population 25-59 year olds

Again, most of these indicators seem to fall under our classification of 'descriptive' indicators, with no direct link to quality issues. In certain contexts, indicators 5. (qualification levels of the population), 6. (drop-outs), 8. (employment status) and 13./14. (unemployment rates) considered as 'performance indicators' or even 'quality indicators' at macro-economic level.

At the moment of writing this report, the project was still focusing on these 'basic indicators'. Some initial definitions and terminology had been adjusted, and a first publication on the indicators available was planned for the end of 1997 – early 1998. This will be a very important achievement, given the lack of such comparable figures so far, as well as the sometimes very difficult conditions under which some of the data had to be collected.

In a second phase, this first list would be enhanced and enriched so as to cover specific topic areas of interest and to provide a better understanding of the functioning and problems of the VET systems. At the stage of finalising this report, it was not yet clear, however, to what extent and in what form the efforts would continue beyond 1998, when the current funding mechanisms of the Observatory Network will cease to exist. Full extension to the former Soviet Union area also seemed problematic. Although it is not yet clear to what extent new and more specific indicators would be added in the future, it seems useful to mention the areas that were originally envisaged:

1. Participation in continuing vocational training
2. Involvement of enterprises in VET
3. Further details on expenditure
4. Labour market trends
5. Correspondence between qualifications and occupations
6. Post-secondary VET
7. Transition from school to work
8. Participation in VET by field of specialisation

It is clear that several of these possible areas (particularly the correspondence between qualifications and occupations, and the transition from school to work) could lead to 'quality indicators', since they say something about the effectiveness and relevance of VET.

A political issue is also how this ETF initiative would eventually converge and complement other international developments in the field of education and training indicators, in particular those of Eurostat, Eurydice, OECD and Unesco.

3.5 Other international developments

3.5.1 The Third International Maths and Science Study (TIMSS)

The Third International Maths and Science Study *(TIMSS)*, undertaken by the International Association for the Evaluation of Educational Achievement (IEA), is one of the few large-scale international comparisons which has sought to measure and compare educational outcomes – in this case student achievement in mathematics and science. When this report was being written, the first results of this third survey had been published (including as part of OECD indicator set), although not all results had been processed yet. TIMSS is considered to be the largest-ever international education research, involving almost 550 000 pupils in three classes of 13 000 schools in 41 countries (including most Western and Central European countries). Amongst the central outputs are two indicators showing the relative performance of 13-year old pupils in Mathematics and Science respectively. The indicator figures show the relative performance compared to the average (which is given a default value of 500). The real political indicator – which has received wide attention in the press – was the ranking of countries resulting from the indicator values.

Although these indicators can hardly be regarded as 'VET indicators', they are certainly quality indicators. An interesting observation is that the initial 'hostility' of teachers and governments (fearing embarrassment) for such international comparisons has been declining over the last decade. More public authorities seem to be interested in knowing how their national school system compares with others – even if the results indicate publicly that performance is low. Indeed, more countries took part in TIMSS than ever before, and there is growing evidence that politicians take these indicators very seriously – even if they are unflattering for their country.

An interesting outcome of the existence of the TIMSS indicators, of which the reliability is no longer seriously disputed, is that it allows to examine which factors seem to play a role in achieving high quality achievements. Without going into detail here, it is interesting to note that the value for the TIMSS indicators does not seem to be directly correlated with factors like the number of teaching hours, the state spending per pupil or even class size. Such findings illustrate that well-constructed indicators can be useful in exposing "myths' about quality factors – and hence contribute to the policy debate about how quality should be improved.

3.5.2 The International Adult Literacy Survey (IALS) project

In 1994 seven countries (including Germany, Switzerland, the Netherlands, Sweden and Poland) launched the first *"International Adult Literacy Survey" (IALS)*. Literacy was defined in terms of the degree of understanding and the use of written material. Levels of literacy were defined and related to a range of factors. The processing of the survey results has already produced a number of indicators, some of which have been or will be included in the OECD indicator set. It is clear that the indicators which relate the adult literacy to the educational level, can be considered as rough macro-economic quality indicator of the education system.

This survey is in many ways complementary to TIMSS, both in its content and the population examined. On the other hand, the number of countries participating is still small, and the underlying concepts and classifications need still further development.

3.5.3 World Bank

The *World Bank*, through its many support activities relating to education and training in developing countries, has also developed interest in the gathering and analysis of education and training statistics as a basis for policy analysis and formulation. On a European level, it is useful to mention the *"Social Challenges of Transition" (SCT)* project, which examined trends in Central and Eastern Europe. The *SCT* project was initiated in order to document empirically the evolving effects of transition on individuals and families. The project has been monitoring indicators of health, earnings, education, labour markets, pensions, social assistance and poverty.

In the field of education, the SCT project has led to the report *"Trends in Education Access and Financing during the Transition in Central and Eastern Europe"* [Laporte & Ringold, 1997]. This cross-country study examines empirical trends in access to, and financing of, education in nine Central and East European countries (Albania, Bulgaria, the Czech Republic, the FYR Macedonia, Hungary, Poland, Romania, Slovakia and Slovenia). The education indicators used within the report are the following (similar indicators have been grouped):

1. Enrolment rates (pre-school – basic – secondary – higher)
2. Secondary enrolments by type (general – technical – vocational)
3. Enrolments in university programmes by type (engineering – social sciences)
4. Private school enrolments
5. Ratio of students to teaching staff (pre-school – basic – secondary – higher)
6. Education expenditure (in relation to GDP – versus total public expenditure)
7. Education expenditures by category (capital – non-personnel – personnel)

8. Per pupil spending relative to GDP per capita (pre-school – basic – secondary – university)
9. Reduction in real public spending for education
10. Expenditures on student transfers
11. Female share of the labour force
12. Employment changes (increase/decrease per main sector)
13. Employment in the education sector
14. Ratio of average wage in the education sector to average wage in the economy
15. Relation between unemployment and education level

This World Bank study, together with the work of the European Training Foundation on Key Indicators, is of great help in understanding the development of the education system in the countries concerned. Again, however, only the indicator on the relation between unemployment and education level could be considered – from a particular quality perspective – as a quality indicator, because it gives an indication (but not more than that!) about how well an education system is adapted to the needs of the economy.

3.5.4 Other developments

There are of course many international organisations and associations that, to a different degree and for various purposes, collect and analyse data for policy analysis and performance measurement. In the field of education, the most noteworthy organisation to be mentioned is of course, *UNESCO*. UNESCO collects educational statistics on a worldwide scale, and publishes these regularly. The practical and methodological problems faced in this exercise are, of course, even more complex than at OECD or EU level. The focus is more on 'statistics' than on indicators. Not surprisingly, it is not possible to achieve the same level of detail, reliability and comparability as at EU level. UNESCO is also the 'owner' of the international '*ISCED*' classification of education levels (7 in total). It should be noted that UNESCO has put forward recently a proposal to modify the classification, in order to obtain a better match with the current education system. Once adopted internationally, this should improve the comparability of data. It should also facilitate the reliability of VET data and their comparison. All of this is likely to be a stimulus for the broader acceptance of education and training indicators.

The *International Labour Organisation (ILO)* is also very active in the field of information collection and analysis, with a focus, of course, on employment related issues. Some of the work bears some direct relationship with education and training issues, such as the ILO work on the working conditions of the teaching profession. Also, the ILO is interested in examining such things as the quality of employment, the right to training, and the recognition of in-company training. It is too early to judge, however, which types of internationally accepted indicators might emerge from these developments.

Let it finally be mentioned that many *national governments* undertake occasional international comparisons between a number of countries, sometimes including quantifiable comparisons. This is often motivated by a desire to verify certain hypotheses in relation to perceived weaknesses or quality problems. Analysing this area is, however, beyond the scope of this study.

3.6 Conclusion

The previous paragraphs have illustrated how, over the last years, the availability of international indicators in the area of education and training has significantly improved. In particular at European level, there is now a vast amount of information available. However, most of these *focus on the regular, mainstream education system*. Vocational education and training is mostly dealt with as part of, and within the frame of, the (government funded) education system. Continuing (vocational) education and training is only marginally covered, although a number of interesting developments are taking place (cf. the forthcoming OECD and EUROSTAT publications). But here there is still a long way to go.

It has also become clear that most international VET or education indicators available are of a descriptive nature. As this Chapter showed, however, *a number of performance and quality indicators have been proposed*, but they suffer from a number of drawbacks. In general, these indicators show only overall relationships between particular variables, and hence their possible contribution to quality improvement activities is limited. Moreover, comparability is limited and the accuracy of data often leaves much to be desired. Indeed, information on the outcomes of education and training is particularly difficult to obtain. Last but not least, the development of more specific quality indicators may become problematic in terms of acceptance by the international education and training community. Increased controversy can be expected about more sensitive quality indicators, since views on quality itself may differ, and certain quality indicators tend to favour particular types of systems.

This being said, the TIMSS-experience has clearly demonstrated that international research on student achievement can result in very useful, and generally accepted evidence. But the scale and volume of resources involved give an indication of the challenge which lays ahead – in particular when we realise that math and science competence can be more easily measured than general competences such as problem solving skills, synthesis skills, situational intelligence. Similar challenges will need to be addressed when other types of outcomes need to be measured and compared.

There are also many *technical and practical problems* to be overcome. As long as VET systems differ substantially, the value of any international indicators will differ. Moreover, the way data are aggregated nationally has a major impact on the type of indicators that could eventually be constructed, as well as their usefulness. The planned revision of the ISCED system may be helpful in this regard, but it will not solve all compatibility problems. Many countries of Central and Eastern Europe, moreover, lack an adequate structure to track data on such topics as educational outcomes, curriculum content or teaching practice.

A final remark on this topic. Over the last few years, much energy and resources have been spent on the development of international indicators. It cannot be denied that their publication has already had an impact, not only in the mass media, but also at the level of policy makers. Nevertheless, the 'communication' purpose seems still to predominate in most cases. Nobody seems to be able to provide an idea of the *cost-effectiveness* of all the efforts that have been undertaken. It is unclear how and to what extent the indicators are being used for policy development, and whether this leads to quality and performance improvement.

Chapter 4: Quality indicators of VET providers

4.1 Introduction

Common characteristics of the international indicators considered in the previous chapter were that they were constructed at the level of education and training *systems*. Their relation to quality improvement must therefore be considered at the macro-economic level. Some of these indicators could also be useful at the level of an individual VET provider (vocational school, training centre, CET institute, ...) and used for different purposes. However, at the level of an organisation it is in general more appropriate to develop *indicators that reflect particular quality characteristics or quality goals* of the institute (although part of these could be common with other institutes).

Such types of indicators are the focus of this chapter. It should first of all be stated that the adoption of quality indicators for VET providers is *still in its early development stages*. Certainly, there is not yet some kind of 'movement' in this regard – less even an initial consensus. What can be witnessed, however, is the increased recognition of the importance of quality approaches and the use of factual evidence in the management of VET institutions. Such trends are likely to favour the gradual use of quality indicators. In some countries or regions, this trend is already supported by the public authorities, who have sometimes 'suggested' or imposed the use of particular performance or quality indicators. In the EU this is as yet, however, more the exception than the rule.

In view of this study, we have examined a number of cases on the use of quality indicators with VET providers of different European countries; on some of these we report on briefly hereafter. It may be useful to report first on how these cases relate to the "Message-Purpose model" which was presented in the first Chapter. On the 'Message' dimension we encountered all types of indicators; in the sections which follow we will concentrate on quality and performance indicators. As regards the 'purpose' dimension, the whole range was equally covered. Here it is possible to distinguish two 'clusters':

- *process related quality indicators* have in general a communication or assessment purpose;
- *goal related quality indicators* have most often an assessment or normative purpose.

In many cases these clusters coincide with a second possible classification:

- *institution specific quality indicators* ;
- *government or customer driven quality indicators for institutions*.

A third useful classification is:

- *objectively measurable quality indicators* that are derived from verifiable measurements;
- *subjective quality indicators* that are based on subjective assessment.

All of this will become more obvious from the examples given.

Let it also be mentioned that, currently, the use of indicators seems to be increasing in private business and other organisations. In the first chapter we mentioned already the use recent use of the so-called *Balanced Score Card*. This is a measurement system, including performance indicators, which considers strategic objectives and operational performance of an organisation across four perspectives: financial, customers, internal processes, and growth and learning. Adaptations of these methods have already been made in various sectors across the world, including in the public sector. The value of these – and many similar methods – as a strategic quality improvement methodology is increasingly recognised in the business world. Although we did not encounter during our research a VET organisation that has already applied such concepts, we thank the underlying principles and methods could also usefully be applied in a training environment. This requires, however, a capacity of institutions to determine their key processes and their strategic development goals.

The examples presented in the next sections do not pretend to be the 'best ones' or to give a 'complete picture'. Our main aim was to illustrate the wide variety of approaches that are currently being used (for that purpose, some higher education cases were also included). For each of the examples, a short description is given, and relevant quality indicators are listed. We recognise that this brief presentation often does not do justice to the overall quality system of the institutions, since the indicators are only a small part of it.

4.2 Examples of institutional-level VET quality indicators

4.2.1 A quality system jointly developed by VET institutes in the Nijmegen area

In the early 1990s, a group of VET institutes in the Nijmegen (NL) area developed a common approach to quality management and quality assurance. The output of their joint efforts was a model for a detailed quality manual and a proposal for a "total quality approach" which covered virtually all key areas of VET institutes: Education and Training programmes, Input, throughput and output of students, Learning process, Organisation, Policy, Staff, Finance, Infrastructure, and Services [Nijmeegs Instituut voor Beroepsonderwijs, 1993]. For each of these areas key components were defined (58 in total), and to each of these was allocated: (1) a quality target or objective, (2) a measurement method, and (3) a model for a possible action plan.

In most of the 58 areas, the combination of a quality target and a measurement led to the definition of a quality indicator which could serve as the basis for comparison and further action. By way of example, we list the indicators for two areas: (1) Learning process, and (2) Staff.

Learning process

1. % of teachers who consider the learning process to be conform with the educational concept of the institute
2. (a) % of tutoring staff (for placements/practice) who consider that the programme is relevant for the chosen employment sector ; (b) % of former students, employed in the sector concerned, who consider the programme to be relevant for their professional needs
3. % of teachers, staff and students who consider the programme goals to be clear and concretely formulated
4. % of teachers, staff and students who are satisfied with the integration of theory and practice
5. % of teachers and students who consider that the programme content corresponds with the stated learning goals

6. % of teachers and students who consider the structure of the programme (content, time, sequence) to be clear
7. % of students who consider that the planned study load corresponds with reality
8. % of students who are satisfied with the student guidance and advice facilities
9. % of students of particular target groups who consider that the programme is sufficiently adapted to their particular needs
10. % of students of particular target groups who consider that the programme is sufficiently flexible in terms of timing, content and format
11. % of students who are satisfied with the quality of the programme (several aspects: content, didactics, support material, exercises, tests, ...)
12. % of students and practice/placement staff who are satisfied with the practical component of the programme (preparation, effect, organisation, clarity of learning goals, guidance, evaluation, ...)

Staff

1. Absenteeism (compared with national average)
2. Proportion between male and female full-time equivalent (norm = 50/50)
3. Correspondence between qualitative/quantitative needs for staff and the actual situation
4. % of teaching staff time spent on teaching
5. number of departments and programmes in which teaching staff teaches (goal: minimum)
6. % of staff who consider that their work load corresponds with their appointment
7. frequency and intensity of staff contacts / employment in the employment sector
8. level of insight in the training needs of staff
9. opinion on support for incoming and outgoing staff
10. frequency of staff appraisals

It is obvious from this (incomplete) list that the indicator set contains measures of very different kind, both objective and subjective ones.

4.2.2 VET indicators and quality criteria of the Region Emilia-Romagna in Italy

The Department for Vocational Training of the regional government of the Emilia-Romagna region in Italy has been pursuing an active quality policy in relation to the training it funds. Since the early 1990s they have defined *quality criteria for training organisations and for training programmes*. The authorities have recently even taken a bold step by requiring that, by the end of 1998, any training organisation will need to have been 'accredited' on he basis of strict quality criteria, if it wishes to remain eligible for public support for vocational training programmes.

Amongst the quality criteria for VET programmes, used for the *ex ante* evaluation and approval of programmes, the region has defined a priority set of 4 criteria. These criteria include one or more indicators (summarised below), which are expressed as *a value on a scale of 1 to 5*, corresponding with the extent to which a certain quality characteristic has been met [Regione Emilia-Romagna, 1992]:

Criterion 3: Relevance with regard to labour market needs and development projects

1. Relevance in relation to sectoral, geographical or developmental needs
2. Importance of the problems to be addressed
3. Involvement of socio-economic actors

Criterion 4: Relevance with regard to the needs of potential users

4. Adequacy and potential take-up with regard to the real needs of potential users

Criterion 8: Accuracy and adequacy of the overall training programme

5. Consistency and details of the training content in relation to the objectives
6. Adequacy of the training approach (didactics, duration, student assessment, ...)
7. Consistency between training content and the organisation put into place (trainers, materials, ...)

Criterion 11: Existence of a documented professional profile (only for initial training)

8. Comprehensiveness of the description of the professional situation targeted
9. Detailed description of the competence profile
10. Validation of the competence profile by employers' representatives

By their very nature, these indicators are subjective and can only be attributed by qualified training experts during the *ex ante* evaluation of programme proposals. A detailed manual has been developed, explaining the value of the scale items (1 – 5) for each of the different indicators. The measures are an example of "normative" quality indicators, since they are used for selection and compare a (complex) variable with a given standard. Please note that these indicators, unlike most other ones that are given in this Section, relate to *programmes* rather than to an institution, and only concern *input* elements (they do not measure trainee satisfaction, for instance).

4.2.3 A Portuguese pilot case on Quality in a vocational school

EPED (Vocational School for Development) is a relatively recent vocational institute that emerged following a European PETRA cooperation project. It was initially focused on the area of environment management but has since widened its scope [Ambrósio & Andrade, 1995].

The school pursues an active quality policy that has led to the establishment of a Quality Observatory that has started the development of quality indicator in areas like:

1. Adequacy of human resources
2. Quality of material resources
3. Management and organisation of the training
4. Evaluation
5. Degree of trainee satisfaction
6. Trainee adaptability to the employment post
7. Possibilities of acquiring local apprenticeships
8. Possibilities of acquiring employment

4.2.4 PROZA- a comprehensive self-assessment tool for education institutes

During 1996-97, a group of Flemish higher (mainly vocational) education institutes developed a comprehensive self-assessment tool, "PROZA", that could be useful for self-assessment, analysis and quality improvement of institutions [Van den Berghe e.a. (forthcoming)]. The overall framework with 9 main areas was inspired by the EFQM-model for quality and business excellence (Leadership, Policy and Strategy, etc.). The system furthermore contains almost 90 quality criteria (grouped under the 9 headings) covering virtually every key aspect of the input, organisation and outputs of higher (vocational) education institutions. For every criterion, five quality stages were defined (like in the Emilia-Romagna case). In addition, for every stage a checklist of four or five questions was established, in order to facilitate self-assessment. In total, the system includes some 2000 questions, which can be used with a variety of methodologies.

One use of the PROZA-system is the construction of quality indicators for each of the criteria, or for groups of these. The quality indicator corresponds with the highest quality stage achieved for an individual criterion. For brevity, we list the current (Summer 1997) quality criteria of the 5th and 7th areas.

5. Core processes

5.1 Process control – general
5.2 Programme and curriculum development
5.3 Development of courses and other programme components
5.4 Planning and interaction of course schedules
5.5 Programme implementation
5.6 Teaching and direct teacher-student interaction
5.7 Tutoring and guided learning
5.8 Professional contacts and placements
5.9 Didactic support material
5.10 Student guidance and support
5.11 Assessment of student achievement
5.12 Continuing education

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7. Student satisfaction

7.1 Educational infrastructure
7.2 Attitude of staff
7.3 Social services
7.4 Information provision
7.5 Participation possibilities
7.6 Complaint handling
7.7 Learning load
7.8 Consistency of the programme
7.9 Didactic approach
7.10 Guidance

The PROZA-system is already being adapted for other contexts, e.g. for the vocational training of handicapped people.

4.2.5 The Danish Strategic Quality Plan for VET

In 1995 the Department of Vocational Education and Training of the Danish Ministry of Education presented a systematic quality strategy plan. This was based on the experience gained with a wide range of quality initiatives undertaken by VET institutes over the previous years. The plan had several components, and paid considerable attention to relevant statistics, as well as to the development of supplementary quality criteria and indicators [Nielsen, S., 1995].

In the Strategy Plan, indicators were announced concerning the *internal quality work* of the vocational institutes in the following areas:

Strategy Development

Management Instruments

1. Strategic management, including school profiling through the supply of courses and services
2. Adaptation strategies to changing goals and needs
3. Local educational plans and curricular work
4. Drawing up of budgets

Educational Instruments

5. Students' right to be consulted / participation
6. School culture and environment

External contacts

7. Cooperation with local education and training committees

8. Collaboration with other schools and colleges: locally, regionally and nationally
9. International activities

Resource parameters

Allocation

10. Planning of supply of courses and services
11. Economic management and cash-flow control
12. Staff recruiting and policy
13. Equipment and physical facilities (incl. library)
14. Registration of students' throughput, incl. completion rates

Operational aspects

15. Guidance, introduction
16. Special educational assistance
17. Safety/working environment
18. Organisation of examinations
19. LOP-registration and "out-reaching" activities (incl. educational offers for adults)

Innovative and development activities

20. Organisation of learning, incl. differentiation, adaptation to the needs of students, integrated teaching through interdisciplinary learning approaches, etc.
21. Human resources policies, incl. continuing training of teachers
22. Innovation of education and development work

For all these areas quality criteria are being developed as well as indicators and methods to measure good or bad quality.

4.2.6 The quality scoreboard of the "Centrum Industrieel Beleid", KULeuven

The *Centrum Industrieel Beleid* of the *Katholieke Universiteit Leuven* is a small university department which is – in addition to research – involved in providing advances level continuing education and training in the field of industrial management. The Centre was one of the first to start with a quality system approach, which led to the award of an ISO 9001 certificate in 1994. In 1993 the Centre started also with the development of an indicator system [De Bruyn & Gelders, 1994]. The initial purpose was to define measurable quality objectives. For that purpose, quality norms were defined for critical processes, and indicators were defined in order to measure to what extent the norm is attained. The most difficult part appeared to be the definition of the norm. In some cases, it was relatively easy to define a standard, in general in the form of a minimum or maximum value. In other cases, the average of the last three years was taken as the initial norm. The indicator set has been adapted and refined over the years.

In the field of advanced continuing education and training programmes, the current quality indicators of the Centre are:

Enrolment

1. Number of requests for enrolment by September 1
2. Number of accepted students
3. Number of students enrolled by November 1
4. Number of Masters degree students enrolled
5. % of successful students for the July and September examinations
6. Number of degrees awarded/number of students enrolled
7. % op optional courses which students take within the Centre

Student satisfaction (based on student surveys)

8. Average score on 'satisfaction' of the programme
9. Average score on 'importance' of the programme
10. Number of courses which over 10% of students consider as inappropriate (norm = 0)
11. Average score on 'satisfaction' of the thesis/term paper
12. Average score on 'importance' of the thesis/term paper
13. % of seminars with average overall score below 6.5 (max =10) (norm = 10%)

Theses/Term papers

14. number of submitted theses/term papers in July and September
15. number of companies which have not been involved
16. number of students not finalising their thesis/term paper
17. number of theses/term papers undertaken by a single student

As can be seen, certain indicators are absolute numbers. The full set of indicators of the Centre, which indicate the performance with regard to the quality objectives, form together a scoreboard which is used for the management review of the quality system (a requirement of ISO 9001). It may be useful to mention that the interpretation and explanation of the values of the indicators (and the trends) may be more important than the values themselves. Some indicators (e.g. 15, 17) reflect quality characteristics which are very specific to the programme taught (in other circumstances, these would be purely descriptive indicators).

4.2.7 Murdoch University (Western Australia)

This university has developed a strategic plan and goals in the areas of teaching and learning, research, community service, management, and the university profile [Murdoch University, 1997]. Key performance indicators have been defined to measure achievements in these areas. In the area of teaching, the goal is "to provide a challenging teaching and learning partnership which attracts able students and produces graduates who are valued and sought after by employers". The associated quality and performance indicators are:

1. Student progress rate (passed subject load expressed as a proportion of certified subject load)
2. Programme completion rate (% of students completing programmes)
3. Cohort retention rate (proportion of students who continue from year 1 to year 2)
4. Graduates' perceived quality of teaching (average values on six areas resulting from a national survey)
5. Graduate status (% of graduates in employment or in full-time study at a specified date in the first year following completion of the course
6. Student evaluation of teaching (% of students of students satisfied)
7. Employers' perception of quality (% considering graduates to be 'good' or 'excellent')
8. Recurrent expenditures per successful equivalent Full-time Student Unit

4.3 Categories of indicators

4.3.1 Typology and attributes

In Chapter 2 we presented our general model for the classification of indicators, the so-called *"Message-Purpose" model.* As the previous examples have illustrated, it is possible to classify most indicators with this model. Let us illustrate this with the following table, giving an example for each cross-section of the "Message-Purpose" model:

Examples of classification of indicators in the "Message-Purpose" Model

Purpose **Message**	***Analysis***	***Communication***	***Normative***
Quality	*Extent of relevance of the training programme*	*Trainee satisfaction with regard to training*	*Unemployment rate following VET courses*
Performance	*% of planned courses delayed or cancelled*	*Average time between initial idea and implementation of training*	*Average cost of a training course*
Policy/ Management	*Trends in percentages of accepted applicants*	*% of employees following training*	*Average educational profile of trainees*
Description	*Male/female distribution of staff & trainees*	*Average number of topics per course*	*Minimum number of trainees per course*

We recall, however, that the allocation of an indicator to a particular area will depend on the context (definition of quality characteristics and intended purpose).

These two dimensions are, however, not the only ones that may be useful for classifying indicators. In particular contexts it could be useful to adopt *other dimensions or "axes" along which indicators can be classified.* Some of these have already been mentioned in this report. The full list is presented below:

Ten possible dimensions for classification of indicators into particular categories[1]

1. Message and Information content (Description, Management/Policy, Performance, Quality)
2. Purpose (Analysis, Communication, Normative)
3. Qualitative versus quantitative
4. Extent of objectivity and measurability (versus subjectivity)
5. Government or customer versus institutional needs as driving force
6. Process dimension (input, process, output, outcome)
7. Process related versus objective/goal related
8. Degree of comparability
9. System level (system policy, system implementation and organisation, institution, programme, course, trainer, trainee)
10. Type of quality characteristics (quality of design versus quality of conformance)

These content-related criteria can be used to classify indicators in particular ways. For instance, most of selected OECD indicators mentioned in Section 3.2 could be given the following attributes:

- Message and Information content: Management/Policy, Performance
- Purpose: Communication
- Quantitative
- Highly objective
- Government needs as driving force
- Predominance on output and outcomes *(for the set indicated!)*
- Process related (not linked to particular objectives or goals)
- High degree of comparability
- System level: system policy and system implementation and organisation
- Quality of conformance characteristics

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[1] There are also some characteristics of an indicator that are related to their mathematical construction:

1. Expressed as % , ratio or absolute number
2. Based a single variable or rather two or more variables
3. Whether there is an external variable (e.g. reference norm) involved or not
4. Whether is shows the situation at a moment of time or rather the difference between two moments

We will not discuss these mathematical characteristics any further here.

4.3.2 Linking indicators to the layer model

The final two of our ten categorical dimensions of indicators relate to the *'Layer model' of Quality in Education and Training* that we have developed. In the CEDEFOP report *Quality issues and trends in vocational education and training in Europe*, this model was already used to classify quality characteristics of VET, and to suggest areas for further development of quality criteria and indicators. One of the tables is represented here, given the direct relevance for this study:

The layer model for Quality in VET
Examples of areas for definition of quality indicators in VET provision

	Quality of design		**Quality of conformance**	
Layers	**Initial VET**	**Continuing VET**	**Initial VET**	**Continuing VET**
Policy & Implementation	*Adequacy of identification of training needs* *Effectiveness of translation of training needs into objectives and designs*	*Idem (but more likely to be at micro-economic level)*	*Cost-effective use of resources* *Adequate balance of training provision*	*Systematic implementation of defined policy* *Cost-effectiveness of training plan*
Institution	*Efficiency of the training plans in achieving desired results* *Suitability of premises*	*Successful positioning on the market* *Adequate offer of training courses*	*Efficiency of the training and financial management* *Staff motivation*	*Cost-efficient delivery* *Quality assurance of processes*
Course programme	*Relevance of content and methods*	*Customer orientation*	*Provision of training tools and materials*	*Customer satisfaction*
Teacher, Trainer	*Adequate skills and qualifications*	*Relevant experience*	*Performance during the course*	*Attitude towards trainees*
Student, pupil, trainee	*Adequate qualifications & preparation*	*Motivation*	*Trainees' success rates*	*Meeting needs of employment*

As this table suggests, most international quality indicators for VET concern 'Quality of design' issues at Policy or System Implementation level (the upper left corner). The institutional indicators discussed in this Chapter cover a wider spectrum, but are more situated at the lower layers of the model. More generally, we have not met a single quality indicator set that covered all areas of the model. This means that certain quality aspects are often tacitly ignored, or not deemed useful to measure and monitor.

The table illustrates also two other points:

- In general, it is more expensive to use indicators for 'quality of conformance' than for 'quality of design';
- The lower down on the model, the "softer" the data is – and the more subjective the indicators.

4.4 Conclusion

At the level of VET institutions, a wide range of performance and quality indicators have been developed across Europe. Some of these have been designed or required by public authorities, often in order to ensure a minimum quality level. Other indicators, often of a more original nature, have emerged from institutions' quality efforts themselves. Overall, little coordination has taken place – it may not have been necessary so far – and it remains unclear in which direction we are going, i.e. what will be the *dominant types and categories of quality indicators*.

It seems also too early to state whether *governmental initiatives* in this regard will increase or not – and for what purpose. If we compare with higher education developments in Europe, we observe that early "enthusiasm" for performance and quality indicators as tools for quality assessment has somewhat diminished, and that supplementary assessment methods are necessary. This may also be the case in VET provision.

Like in the case of international indicators, the relationship between the use of quality indicators and the actual quality improvement – and the cost-effectiveness – requires more investigation. There is some reason for optimism, though, since often such indicators have emerged from a quality initiative and hence are often firmly embedded in the institutional quality strategy. A weak point is that often only a small part of all quality characteristics are covered. The challenge ahead may be illustrated by the following list of Mortimore [1988] who identified 12 key factors of *effective schools*:

1. Purposeful leadership of the headteacher (active involvement without exerting total control, record keeping)
2. The involvement of the deputy head (sharing of responsibilities, ...)
3. The involvement of teachers (curriculum planning, decision-making on school policy)
4. Consistency amongst teachers (continuity, consistency of teacher approach)
5. Structured sessions (teachers provide strict framework, but allow some freedom)
6. Intellectually challenging teaching (higher-order questions, enthusiasm, high expectations)
7. Work centred environment (content related work; little time on routine and maintenance,...)
8. Limited focus within sessions (only one curriculum in a session)
9. Maximum communication between teachers and pupils (flexible approach, group communication)
10. Record keeping (headteachers and teachers)
11. Parental involvement (different aspects)
12. Positive climate (praise, enthusiasm, friendly pupils' attitude, no grafitti, ...)

Even when assuming that these would be the only quality criteria for a vocational school (which is far from the case), the nature of the items listed shows the complexities and difficulties involved in defining a reliable and cost-effective indicator set. It also suggests that the design and use of quality indicators must not only be seen in terms of reliability and coverage, but also in terms of cost and practical feasibility.

Chapter 5: Use of quality indicators

5.1 Why using quality indicators?

The foregoing Chapters have already shown that, in education and training, quality indicators seem to be particularly *useful at two levels*. The first is the institutional/ organisational level, where they can be used as a tool within a quality approach. The second level is that of the public authorities (sometimes private bodies) providing the resources; here quality indicators are more considered as instruments for inspection, comparison across different institutions, and policy-making. It should be noted that certain indicators can be useful at both levels.

Quality indicators in (V)ET seem to be mainly used for (1) control and (2) quality improvement functions. In principle, stakeholders at the macro and institutional level should be concerned about both aspects. In reality, at macro-economic level, the government is often more interested in the control function, whilst institutions which are serious about using indicators are predominantly interested in the quality improvement function. In what follows, we have taken as reference the *institutional level* – because this is where most quality initiatives are being implemented – but some of the findings hold for the macro-economic level as well.

The modern quality movement puts emphasis on defining clear quality objectives and standards and on the measurement of quality level attained. This "measurement" process is not seen as an end in itself, but as *a tool and input for quality assurance and continuous improvement*. Obviously, well-designed quality indicators can be very useful in this regard. They can:

- provide evidence of the effectiveness of the quality assurance mechanisms,
- pinpoint areas in which quality improvements are desirable, and/or
- respond to accountability requests in an effective and efficient manner, without need for recourse to excessive inspection and control.

In our opinion such advantages can only be achieved fully if the following ten *conditions* are met:

Design requirements

1. the purpose of the indicators is clearly defined
2. the quality indicator set covers all key quality factors of a system
3. the quality indicators have a relevant degree of aggregation (not too high or too low)
4. the indicators are a measure for the most important quality dimensions of a process or output
5. the degree of comparability is high (over time, across units, ...)

Requirements for processing and use

6. the data for the quality indicators can be collected and processed easily and cost-effectively
7. the quality indicators are valid (they provide information on what they are supposed to measure)

8. the values of the quality indicators are reliable (they measure what they are supposed to do)
9. the indicators can be unambiguously interpreted and their meaning cannot easily be manipulated
10. stakeholders (management, staff, resource providers, ...) accept the relevance of the indicators

Often, some of these requirements cannot be achieved simultaneously, implying that a set of quality indicators can only partially fulfil the functions listed above.

There is no point in designing and using quality indicators merely for the fact of demonstrating that quality is excellent. In fact, from a quality management perspective, a main argument for using quality indicators is to monitor areas in which quality improvement is needed or desirable. Adequate use of a quality indicator system requires that procedures be in place to *react promptly* when quality indicators demonstrate weak performance. This reaction might be:

- take corrective action: reinforce current procedures or modify the procedure to make it suitable for the new situation, so that goals may be attained more easily;
- change the goal instead of the practice (the goals or norms may have been overambitious, unrealistic, or requiring too much resources);
- (if the measurement is faulty or unreliable): improve measurement

5.2 Problems with using quality indicators

The main reasons why quality indicators have not found widespread use (in VET and other areas) is that one or more of the ten requirements listed above cannot easily be met. In the following, we discuss the most frequently problems encountered. When designing and using quality indicators, it is very important to be aware of such problems, and avoid these as much as possible.

5.2.1 Possible design problems for quality indicators

One of the most fundamental problems often encountered is that *the purpose of the indicators is not clearly defined.* Those designing or imposing particular indicators may have a vague idea of how and when the indicators might be used, and in what context. But implicit or hidden assumptions about the purpose and use may lead to the design of an indicator that is inappropriate for what is eventually intended. Indeed, dozens of indicators can be designed for any particular process, each with their possible advantages and disadvantages in a given context (including cost of data collection). It does not suffice to state that "*we need an indicator to improve quality*"; rather one needs to define which quality aspects need improvement, and then to design the indicators that could be most helpful (and economical) in order to prepare and sustain sound decision-making and effective quality improvement.

A dangerous tendency, sometimes observed with statisticians and those responsible for data gathering, is for *indicators to become a goal in themselves*, rather than a tool. Even if their use was initially justified, after some time quality and performance indicators may become the legitimacy of a expensive data gathering process which leads no longer to highly valuable information. This is, for instance, the case when the value of indicators changes little over time. We recall that the OECD has recognised this potential trap by not repeating all the indicators in every version of *Education at a glance*.

Sometimes the purpose of the use of a quality indicator may be clear to one stakeholder (e.g. the government) but not to the others. Much resistance against quality indicators in education and training institutions can be attributed to the suspicion that they are intended as a means to reinforce control or to promote a particular concept of quality.

Another type of problem, which is sometimes unavoidable, emerges when an attempt is made to create a comprehensive set of quality indicators that is supposed *to cover all key quality factors of a system*. This *may not be possible*, either because of reasons of cost, or because certain quality factors are simply not measurable in a direct way. For these reasons, it is often attempted to catch the complexity of a system through a very limited of indicators. This may indeed suffice for certain quality improvement efforts, since quality characteristics tend to be correlated with each other (a system which has high quality in its key components, has most often also quality in its secondary features).

Nevertheless, this limitation tends to produce its "*perverse*" effects, in particular *a risk* of the actors *to work only on those processes and outputs for which quality indicators exist*. A familiar example is that of the students who seek to optimise their test and examination results, rather than the learning itself. In the VET world there are also many examples. Consider, for instance, the potential impact of performance indicators that show the relationship between a particular VET programme and subsequent unemployment. Although high unemployment rates may put pressure on adapting the programme, a more easy way to increase 'performance' would be to refuse admission to less able and more risky students...

Another design problem is that the quality indicators have not been defined at the right 'level'. The level of aggregation may be too high, which implies that useful information is hidden (for instance, when average student achievement is measured across all programmes at once). Alternatively, the level of aggregation may be too low. This may give the impression of high diversity in quality or rapidly changing trends, whilst in fact the differences may be largely attributable to statistical or seasonal fluctuations.

We recall that *it is intrinsic to statistics and indicators to 'hide' information*, because data is aggregated in a particular way. Such data manipulation is never entirely value-free. By creating particular types of indicators – rather than other ones – certain organisations may compare favourably, specific problems may not be observable, etc. Thus, designers of indicators need to assume their responsibility and be able to justify why a particular indicator has been chosen, and what type of information the indicator cannot reveal.

For cost-effectiveness reasons, indicators are often designed with existing data gathering processes in mind. This – understandable – approach has a big drawback, however: the *indicators may not be good measure for the most important quality dimensions of a process or output*. Rather, they give information about those attributes that are easily measurable. Of course, crucial quality aspects may not be measurable, and hence not easily captured in an indicator. For instance, how would one measure the personal development of a pupil? This fundamental problem should be recognised, although it should not be exaggerated neither. First of all, with some imagination there are often possibilities to consider a different perspective, to look at the issue at a higher conceptual level, or to find ways for measuring the effect of a certain quality feature in an indirect way. Secondly, it can often be assumed that quality characteristics are correlated with each other. And finally, if something is not even subjectively measurable, there is no point in developing a quality approach, since quality assurance and quality improvement cannot be implemented.

In a publicly funded sector like education there is often a tendency to develop indicators in relation to expenditure. For example: 32 out of the 39 "official" 'University Management Statistics and Performance Indicators' for the UK universities around 1990, included 'expenditure' items (plus another 'research income') [Ball & Wilkinson, 1992]. Such indicator sets have a focus on efficiency and performance, rather than on effectiveness and quality.

Sometimes, *indicator values cannot easily be compared with each other (over time or across different units)*. From a quality management perspective, the most appropriate indicators are often local in conception, issue-specific, and tailored to the mission of the organisation. The more specific an indicator is, the lesser it will allow valid comparison. On the contrary, if the prime purpose is comparison, system-wide indicators are needed – which in turn may not have the necessary specificity, and hence not be optimal for an individual organisation. All of this underlines the crucial importance of a preliminary analysis of how and where an indicator will be used.

A particular cause for limited comparability may be the *varying influence of external factors*. In fact, an implicit assumption in the design of many indicators is that the external conditions are the same over time and across the units concerned. If this condition is violated, the relevance of the quality indicator will be severely threatened. An example in education and training is the factor "student" or "trainee" itself. A training provider may be severely limited in his capacity to provide a quality outcome because of the insufficient initial competence or lack of motivation of students. Another well-known example is the unemployment rate which may fluctuate much more because of changing market demand, than because of the changing quality of VET programmes.

Another external factor that may undermine the validity and usefulness of quality indicators in education and training environments, is the fact that *the customer may not be very clear* in what he wants or needs. Consequently, the design of training programmes may be based on partially false assumptions. Again, output quality indicators may not do full justice to the efforts undertaken by VET institutions, since they may have no control on the quality of the training needs analysis.

5.2.2 Potential problems in the processing and use of quality indicators

Often, one of the main obstacles for the adequate use of quality indicators is *the relatively high cost of data collection and processing*. Moreover, cost items such as preparation and reporting (salary staff time) are often underestimated. It has repeatedly been argued – in particular in service environments where automated measurements are hardly possible – that the use of quality indicators would require data collection and processing efforts that would not proportional to the benefits which could eventually be achieved. This assumption may be true or false, depending on the time-scale considered and the current patterns of "quality costs". Although the theory of "quality costs" actually suggests that over time, such costs will be recuperated by more efficient and effective operation, initially the staff time needed for the introduction of indicators may put a strain on the core activity of the organisation.

It is also be mentioned that, even if the use of quality and performance indicators is intended to produce benefits and contribute to cost savings, demonstrating such benefits may be quite difficult in practice.

Sometimes, the *validity of the quality indicators may be poor*: they may provide information, but not on what they are supposed to measure. For instance, an indicator may claim to concern the "quality of a teacher" but only be based on his/her qualifications. This indicator may be highly reliable but not valid. A more extreme example, which was once reported to us, concerned the "quality of meetings": indicators were suggested which measured the frequency and duration of meetings... Such examples underscore the need to clarify and agree on the underlying quality or performance concepts.

A potential validity problem emerges in complex systems, for which an indicator set has been defined. Each of these indicators relates to particular processes and outputs, which are one way to describe the key relationships between activities. But there are often other relationships amongst the components of a complex quality system that may not be revealed at all by the indicator set.

In many situations – in particular in a service environment – *the reliability* of the quality indicators and their underlying data *may be problematic*. We have touched upon this already when mentioning the variable influence of external factors. Other potential causes of poor reliability are the limited sample of measurements on which the indicator is based (making extrapolations dangerous), the crudeness or inappropriateness of the measurement method (e.g. only allowing a Yes or No response) and a high degree of subjectivity and variation. Some users also have problems in correctly interpreting concepts like "probability", "statistically significant differences" or "standard deviations", which affects the reliability of the interpretation. When reliability problems cannot be fully avoided, it is always good to have an idea of the degree of error that could be involved.

This brings us to a related problem: *certain indicators may be interpreted ambiguously* by different people. This is often related to different quality perspectives of users and/or the context in which the indicators are used. A classical example: does an increase in pass rates of student always indicate a quality improvement? Often it will – but the trend may also suggest that (1) there has been higher selectivity at the admission stage, or (2) that student assessment standards have been lowered. Another 'traditional' example: highly different unemployment rates between countries, may actually be the result of different interpretations of the term 'unemployment'.

As was mentioned before, many people do not know how to interpret correctly certain statistical concepts. For instance, an indicator may show a correlation between variables, which may incorrectly be considered as a demonstration of a cause-and effect relationship. But the interpretation problem may be even more mundane than this: even statisticians may have problems with the *verbalisation* of indicator data. For instance, is a 10 % change of an indicator a 'large increase' or does it rather reflect 'stability'? This shows that for even highly reliable indicators, subjective interpretation can easily slip in.

A final potential problem of the application of quality indicators is that certain *stakeholders (management, staff, resource providers, ...) reject their relevance*. This may be the case if they do not support the underlying quality concepts, or if they perceive the indicators as a threat. The level of resistance is often proportional to the perceived risked of loosing control, autonomy and resource.

Another reason for rejection is the potentially perverse effect of using certain indicators as a control measure. Cases have been reported of performance indicators in the USA concerning the percentage of students graduating in the minimum time fixed for their degree. These have led some secondary school systems to pass every student regardless of performance. In the field of research, indicators related to the number of pages published have in some case stimulated the proliferation of articles, and even the creation of new journals.

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Conclusion

In this report we have considered indicators in the field of education and training, with a particular focus on quality and performance indicators in VET. The previous chapters have shown that, whilst the development of such indicators is still in its early stages, there has been considerable progress over the last few years. Reliable design methods have emerged, data collection has been improved, and there is an increasing volume of publications about the topic.

There is still a long way to go, however. This concerns, first of all, *more international cooperation and consensus on the design of quality indicators* in VET, in particular in continuing education and training. This will not be easy, since CET provision differs strongly across countries. It is also much more diversified and less state-controlled than initial education and training, which makes reliable data collection much more costly and cumbersome.

A second challenge is the *appropriate use*, both at system and institutional level, *of quality indicators as an input to quality improvement*. Indeed, the assumption is often that decision-makers will use this information for improving processes and systems. Yet it many cases the validity of this assumption is difficult to prove. Rational evidence is by far not the only factor considered in the decision making process.

Thirdly, more *research* is needed in relation to *the cost-effectiveness of the development, processing and use of quality indicators*. To what extent and under what conditions may "quality cost" theory apply? What are the limits beyond which the cost of quality indicators starts to exceed the cost of potential benefits? Research is also needed to examine how some of the problems in the design and use of indicators can be reduced or eliminated.

These problems and challenges ought not to be used as a pretext for abandoning quality indicators. Rather, *we advocate an increased use* of them. Carefully designed and properly used, the added value of quality indicators for quality assurance and improvements efforts is undeniable. Serious quality management efforts seem hardly possible without the use of quality indicators. They can also serve part of the demands emerging from the increasing call for accountability. There is evidence as well in education and training that a proper use of quality and performance indicators improves the quality of the debate on education and training issues. A key concern to be considered is *the full understanding of the particular context in – and purpose for – which quality indicators are developed*.

Finally, we pledge for *more imagination in the design and use of quality indicators in education and training*. We feel that much could be learned from the experience of the business world, in particular in Europe. Education and training indicators also tend to become quickly stabilised, and possibly turn into an end in themselves. But the external environment changes quickly, and so does the relevance of particular indicators. A more dynamic view may be needed, to reflect more properly the changing needs and aspirations of the customers.

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Annex B: A design methodology for quality indicators

B.1 Introduction

This annex presents *a methodology for defining quality indicators* in VET. The approach proposed is based on our experience in assisting different types of organisations with the establishment of indicators. In fact, the methodology is so general that it can be used for most types of indicators and indeed for other sectors as well – provided the purpose of the indicators has been defined properly. The approach suggested has been tested and implemented at *organisational level* (institution, department, unit;...), but it may be useful at system level as well. Our focus on the organisational level is further motivated by the fact that it is the level where there is still most work to do, and where a huge variety of indicators can be expected.

Before we develop the methodology in the next Section, let it just be mentioned that there are essentially *three kinds of methods* for defining quality or other types of indicators:

- *Start from the data available.* Analyse the variables for which data is available through an existing or planned measurement process, and then identify the most appropriate combination of these. This approach has the obvious advantages of speed of design and cost-effectiveness of use. However, the information obtained may not be relevant to what is needed.

- *Start from goals and objectives.* Translate the organisation's strategy into operational and verifiable objectives at different levels, and then identify indicators to verify the achievement of these goals. The advantage of this method is that it provides the organisation with a clear focus. On the other hand, it may require a cumbersome measurement process and/or lead to the neglect of other key quality characteristics.

- *Start from critical processes.* Identify first the key processes that are necessary for an organisation to accomplish its mission, and use for each of these output, process and/or input variables to construct one or more indicators. This approach is often the most comprehensive one, but requires most time as well. It combines features, advantages and disadvantages from the two other methods. The method may also help in identifying in which critical areas no valid indicators can be constructed (at a reasonable cost).

Each of these approaches has its advantages and drawbacks. In many cases the three pathways may lead to a common core of similar indicators, but sometimes differences can be considerable. The methodology proposed below is based on the third method. It consists essentially of the following steps:

- Identify the critical processes;
- Determine input-, process- and output-factors for each of the processes;
- Construct indicators based on appropriate selection of factors.

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B.2 Key steps of the methodology

B.2.1 Starting point: identification of the critical processes

One of the fundamental assumptions of modern quality thinking is that it is in the "*processes*" that the quality of products and services (or the lack of it) is generated. A process is a sequence of activities that lead to a particular result or that transform an input to an output. A process consists of different steps or sub-processes. In general, different persons are involved in a process. Preparing a meal is an example of a simple process: you and others use inputs (ingredients, energy, skills), manipulate these and finally deliver a new product. Organising an international conference or manufacturing a laser printer are examples of far more complex processes, which involve many sub-processes. Some *examples* of processes which are more typical in education and training organisations are:

- develop a new course programme,
- assess student performance,
- recruit staff,
- organise student placements,
- etc.

Operational characteristics of a process are:

- the different elements/steps/stages can be separately identified,
- de sequence of steps can be repeated,
- the process has measurable characteristics (begin and end, cycle time, resources needed, final and intermediate outputs, ...),
- the process is predictable (to a certain extent).

One can use this list to check whether certain activities or operations are processes or part of processes. It has actually been observed that over 85% of what we do can be considered as part of processes; there are few organisations that escape from that rule. A typical, medium-sized organisation may have hundreds of processes. Please note that, in general, there are many different ways in which activities and tasks can be grouped and clustered into processes.

In a perfect process, the quality of the input will automatically lead to high output quality. For instance, when people have certain formal qualifications, we expect them to be able to conduct certain activities. Or we may have "natural" confidence in a well-equipped hospital with competent staff. However, the traditional assumption that high quality of the input automatically leads to high output quality is often not justified anymore:

- the complexity of processes increases all the time (more people involved, more activities, more factors to be taken into account, ...) – and thus more things can go wrong;
- processes change faster than in the past; so results become less predictable and are not necessarily guaranteed because of past performance;
- customers become less homogeneous and have changing and increasing quality expectations; it is thus less obvious how output quality should be defined and achieved.

For such reasons, *process quality* has become increasingly important. Many quality experts claim that over 80% of quality problems of products and services result from inefficient and ineffective processes. Only the rest can be attributed to quality problems at the input stage. Typical process quality problems are:

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- the process itself is not optimised (overlaps, many transfers, waste of materials, ...);
- the interfaces between sub-processes are not efficient (bad communication, no acceptance of the internal customer-supplier concept, delays, ...);
- when problems occur, people think in vertical, hierarchical terms, instead of horizontally across the process.

The so-called '*critical processes*' are the key processes of an organisation which it needs in order to accomplish its mission and provide the quality that customers expect. Such critical processes can be defined at different levels in an organisation, with corresponding different levels of abstraction and conceptualisation. At the lowest organisational level (e.g. a unit) the typical number of critical processes is between 5 and 8. It goes without saying that quality and performance indicators need to be derived predominantly or exclusively from these critical processes.

B.2.2 Determination of input-, process and output variables

For most processes, it is relatively straightforward to identify a number of input-, process- and output-factors. Each of these factors is briefly discussed below.

The *input* of a process consists of everything that is used and processed for obtaining the output desired. The input will typically consist of (1) outputs of other processes, and (2) knowledge, skills, resources and materials. Obviously, the quality of the input is critical for the quality of the output. If you lack the knowledge and skills to make a presentation, then the result is likely to be a catastrophe. If you lack the appropriate medicine, you may recover badly from your treatment. Some *examples of input-factors*:

- number of staff, collaborators, students, ...;
- financial resources, infrastructure, materials;
- qualifications, degrees, expertise;
- sub-contracting, expertise hired, understanding of environment;
- preliminary knowledge of trainees.

In general it is possible (but not always relevant) to attach a price-tag to the input factors.

The *output* of a process or a sub-process is the result; when there are output effects over a longer period, the term "*outcome*" may be used. In the modern views on quality, the customers, i.e. the persons or organisations receiving or using the outputs, determine what output quality really means. Please note that the principles of output quality also apply to internal and intermediate outputs. This is quite important when different sub-processes are connected – as is often the case in education and training. *Examples of output-factors* are:

- tangible results (documents produced, course syllabi printed, ...);
- non-tangible results (satisfaction, motivation, image improvement, ...);
- improved knowledge, experience, skills;
- indirect effects such as employment;
- assessment results;
- new programmes.

Certain output factors are directly measurable; other ones may only be measurable approximately or in an indirect way.

Process-factors relate inputs and outputs of a process. They may concern aspects like:

- duration, delay, timeliness, throughput time, ...;
- time allocation by staff for the different process activities;
- efficiency, productivity, unit cost, ...;
- frequency of problems, defects, deficiencies, ... during the process;
- provision of training and information tied to the process;
- adaptations to the process.

The difference between process-factors and input- or output-factors may not always be obvious, since process-factors also display input and output characteristics.

B.2.3 Construction of an appropriate indicator

It is easy to see how the combination of input-, process or output-factors would allow the construction of dozens of indicators for an individual process. This is neither necessary nor relevant. Indeed, quality indicators of a particular process are often correlated with each other: a low performance on one indicator is often recognisable with other indicators (for the same process). In general, it suffices to *construct one or two quality indicators for each critical process*. Of course a "sensitive" quality characteristic needs to be defined, not one which is always fulfilled. For instance, when selecting a quality indicator in relation to trainers, it may be more useful to define one in relation to didactic performance (which is likely to vary) than in relation to qualifications or experience (which should be OK). In fact, the focus on a limited set of quality indicators is only possible if it can safely be assumed that most basic functions are decently executed.

The key steps involved in the construction of the quality indicator(s) may be summarised as follows:

1. Explicit definition of the 'message' and 'purpose' of the indicator: what should it say and how will it be used.
2. Identification of suitable input-, process- and output-factors.
3. Further narrowing down to factor with easily measurable and verifiable characteristics.
4. Combination of factors into potential indicators.
5. Final selection of one or two indicators.

The different indicators for the critical processes (typically 10-15) may be grouped and displayed in a scoreboard.

Let us briefly discuss stages 4. and 5. As regards stage 4. (the *combination of factors into indicators*), the examples given throughout this report have already indicated the very wide range of possibilities. These include:

- a comparison of an output-factor with a norm, standard or goal (difference, deviation, ratio, ...);
- a statistical measure of an output-factor itself (e.g. average student satisfaction);
- a comparison of output-factors with input-factors (in general as a ratio);
- a comparison of output-factors with certain process-factors (*not always appropriate*);
- a comparison of process-factors with input-factors;
- etc.

Trend indicators may be constructed by defining the relatively change of a factor over time (i.e. percentage change, or "1997=100").

Often, some creativity is needed in exploring possible indicators. For instance, it may not be possible to develop an indicator for the friendliness or helpfulness of staff – unless there is a regular customer survey – but you may be able to count the number of complaints, the number of customers who never come back, etc.

The final stage (5.) in the determination of indicators is the selection amongst the potential ones identified. Sometimes there may be an obvious choice for a particular indicator (because it may be the only one that is easily and objectively measurable). But often, *criteria* will be needed in order to arrive at the final choice. The following questions may be useful in order to arrive at the best compromise (they are derived from the ten conditions for good quality indicators presented in Chapter 5):

1. Does the indicator serve well the purpose and use which one has in mind?
2. Is the indicator complementary to other indicators of the quality indicator set?
3. Is the quality indicators defined at the relevant degree of aggregation (not too high or too low)?
4. Is the indicator a measure for an important quality dimension of a process or output?
5. Does the indicator easily allow comparison (over time, across units, ...)?
6. Can the data easily and cost-effectively be collected and processed?
7. Does the quality indicator provide valid information on what it is supposed to measure?
8. Can the indicator provide reliable information?
9. Will the indicators be unambiguously interpreted?
10. Will all stakeholders (management, staff, resource providers, ...) accept the relevance of the indicators?

Let it finally be mentioned that there are some useful indicators – even for quality purposes – which cannot be linked directly linked to a particular process. For instance, some outcomes are linked to a wide range of processes: satisfaction, motivation, overall efficiency, absenteeism, turn-over, ...

Annex C: Glossary of terms and abbreviations

CEDEFOP	European Centre for the Development of Vocational Training
CVET	Continuing Vocational Education and Training: vocational training programmes and courses for people who are (or could be) at work and/or have already some kind of general or vocational qualification
EC	European Commission [the abbreviation EC is also used (not in this report) to refer to the European Community]
ETF	European Training Foundation
EU	European Union
EUROSTAT	The Statistical Office of the European Union
Eurydice	An education information and analysis network of the European Commission and the EU Member States
IALS	International Adult Literacy Survey
ILO	International Labour Organisation
Indicator	A measure of the overall situation or performance, providing broad and useful information [Section 1.1.2]
ISCED	An international classification system of education levels
IVET	Initial Vocational Education and Training: the vocational part of the secondary education system, leading to recognised qualifications at that level
"Message-Purpose" model	A model for classifying indicators based on two dimensions (information content and used) [Section 1.2.1]
OECD	Organisation for Economic Cooperation and Development

Performance Indicator	A figure that indicates the (degree of) performance for an important component of an entity; in most cases, performance indicators include a process or output element [Section 1.2.2]
Quality	A set of attributes of products, services, processes and systems [discussed in Section 2.2]
Quality Indicator	A figure that is helpful for the assessment of a quality characteristic or the achievement of quality objectives [Section 2.3]; a quality indicator is in general also a performance indicator
Quality objective / goal	A specification of one or more quality characteristics of processes, outputs or systems which need to be attained
Standard – Norm	A rule or value which serves as a reference for comparison
TIMMS	Third International Maths and Science Study
TQM	Total Quality Management: a set of principles and methods for ensuring customer satisfaction, quality assurance and continuing improvement throughout an organisation
UOE-questionnaire	A common questionnaire used by the EU, the OECD and UNESCO to gather data on education
VET	Vocational Education and Training (includes IVET and CVET)

CEDEFOP — European Centre for the Development of Vocational Training

Indicators in perspective
The use of quality indicators in vocational education and training

Wouter Van den Berghe
Tilkon Consultancy

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